PROCEEDINGS

of the

American Society

of

Civil Engineers

TWO PARTS

PART 1

DECEMBER, 1927

CONTENTS

FLOOD CONTROL WITH SPECIAL REFERENCE TO THE MISSISSIPPI RIVER: A SYMPOSIUM

EMERGENCY DAM ON INNER NAVIGATION CANAL AT NEW ORLEANS, LOUISIANA
BY HENRY GOLDMARK, M. AM. SOC. C. E.

UNUSUAL ENGINEERING FEATURES OF AN IMMENSE THEATRE BUILDING
BY R. MCC. BEANFIELD, ASSOC. M. AM. SOC. C. E.

METHODS USED IN THE CONSTRUCTION OF TWELVE PRE-CAST CONCRETE SEGMENTS FOR THE ALAMEDA COUNTY, CALIFORNIA, ESTUARY SUBWAY
BY ALVIN A. HORWEGE, ASSOC. M. AM. SOC. C. E.

ANNUAL MEETING, NEW YORK, N.Y.
JANUARY 18-20, 1928

CURRENT PAPERS AND DISCUSSIONS

		Discussion closes
"Automobile Hazards in Cities and Its Reduction." WILLIAM J. COX	Apr., 1927	
Discussion (Author's Closure)	Aug., Sept., Oct., Dec., "	Closed
"The Eye-Bar Cable Suspension Bridge at Florianopolis, Brazil." D. B. STEINMAN and WILLIAM G. GROVE	May, "	
Discussion	Aug., Sept., Oct., Nov., Dec., "	Dec., 1927
"Urban and Interurban Buses." BRITTON I. BUDD	May, "	
Discussion	Aug., Dec., "	Dec., 1927
"Tides and Their Engineering Aspects." G. T. RUDE	Aug., "	
Discussion	Oct., Nov., Dec., "	Jan., 1928
"Re-Arrangement of a Business District: Changes in Recent Years in Pittsburgh, Pennsylvania." NATHAN SCHEIN	Aug., "	
Discussion	Oct., Dec., "	Dec., 1927
"The Lake Washington Ship Canal, Washington." W. J. BARDEN and A. W. SARGENT.	Aug., "	
Discussion	Oct., Dec., "	Dec., 1927
"Precise Weir Measurements." ERNEST W. SCHODER and the late KENNETH B. TURNER	Sept., "	Jan., 1928
"Basic Information Needed for a Regional Plan." HAROLD M. LEWIS	Sept., "	
Discussion	Nov., Dec., "	Jan., 1928
"Housing and the Regional Plan." JOHN IHLDER	Sept., "	
Discussion	Nov., "	Jan., 1928
"Cultural Opportunities in Regional Planning." ANDREW WRIGHT CRAWFORD	Sept., "	
Discussion	Nov., "	Jan., 1928
"Forecast: The Regional Community of the Future." THOMAS ADAMS	Sept., "	
Discussion	Nov., Dec., "	Jan., 1928
"The History and Development of Road Building in the United States." THOMAS H. MACDONALD	Sept., "	Jan., 1928
"The Question of Roads in France." P. LE GAVRIAN	Sept., "	Jan., 1928
Historic Review of the Development of Sanitary Engineering in the United States During the Past One Hundred and Fifty Years: A Symposium	Sept., "	
Discussion	Dec., "	Jan., 1928
Industrial Waste Disposal: A Symposium	Sept., "	Jan., 1928
"Earth Work by the Hydraulic Method." ROY E. MILLER	Sept., "	
Discussion	Nov., "	Jan., 1928
"Problems in Concrete Dam Construction on the Pacific Coast." ARTHUR S. BENT	Sept., "	
Discussion	Nov., "	Jan., 1928
"New Theory for the Centrifugal Pump." A. F. SHERZER	Oct., "	
Discussion	Dec., "	Feb., 1928
"The Hydraulic Design of Flume and Siphon Transitions." JULIAN HINDS	Oct., "	
Discussion	Dec., "	Feb., 1928
"Water-Power Appraisals." WILLIAM H. CUSHMAN	Oct., "	Feb., 1928
"The Great Yangtze Bar." H. VON HEIDENSTAM	Oct., "	Feb., 1928
"Side Spillways for Regulating Diversion Canals." W. H. R. NIMMO	Oct., "	Feb., 1928
"A Graphic Method for Determining the Stresses in Circular Arches Under Normal Loads by the Cain Formulas." FREDERICK HALL FOWLER	Oct., "	
Discussion	Dec., "	Feb., 1928
"Surveying and Mapping in the United States." C. H. BIRDSEYE	Oct., "	Feb., 1928
"Surveys on the Coast of New Jersey." VICTOR GELINEAU	Oct., "	Feb., 1928
"Advances in Waterway Engineering During a Half Century." W. M. BLACK	Oct., "	Feb., 1928
"The Delaware River from Philadelphia to the Sea." F. C. BOGGS	Oct., "	
Discussion	Dec., "	Feb., 1928
"Traffic Control by Electric Signal Lights." M. O. ELDRIDGE	Oct., "	
Discussion	Dec., "	Feb., 1928
"Traffic Control in New York, N. Y." PHILIP D. HOYT	Oct., "	Feb., 1928
"Snow Removal Methods in New York, N. Y." ELMER G. GOODWIN	Oct., "	Feb., 1928
"Snow Removal from Streets in Boston, Mass." EDWARD F. MURPHY	Oct., "	Feb., 1928
"Boundary Surveys." C. T. JOHNSTON	Oct., "	
Discussion	Dec., "	Feb., 1928
"Aerial Tramways." F. C. CARSTARPHEN	Nov., "	Mar., 1928
"The Head-Works of the Imperial Canal." C. E. GRUNSKY	Nov., "	Mar., 1928
"Baffle-Pier Experiments on Models of Pit River Dams." I. C. STEELE and R. A. MONROE	Nov., "	Mar., 1928
"Maximum Flood Discharge in San Joaquin Valley, California." OREN REED	Nov., "	Mar., 1928
"Re-Designing Catawba Station for Service on a Large Transmission System." W. S. LEE	Nov., "	
Discussion	Dec., "	Mar., 1928
"The Science of Foundations—Its Present and Future." CHARLES TERZAGHI	Nov., "	Mar., 1928
"The Conowingo Hydro-Electric Development on the Susquehanna River." ALEXANDER WILSON, 3d	Nov., "	
Discussion	Nov., "	Mar., 1928

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROCEEDINGS

VOL. LIII DECEMBER, 1927 NO. 10

SOCIETY AFFAIRS

Flood Symposium

In presenting in this issue of *Proceedings*, a Symposium on Mississippi Flood Control the Society is indeed fortunate in the content and scope of the papers, in the fund of knowledge and ability represented by the authors, and in the timeliness of the whole matter to the country at large.

Comments on the program for the Columbus Meeting, at which this Symposium was given, were most gratifying. Apparently everybody in attendance appreciated the tremendously wide and intensive studies that were reported. Unfortunately, however, only a relatively small number of members can attend such meetings. Others are dependent on subsequent publication of the material.

Prompt Publication

The interest of such members was definitely in the mind of the Committee on Meetings and Publications when it authorized the immediate publication of all these papers. It realized that this would mean some slight re-arrangement in the program of printing, possibly the deferring of a few papers that would otherwise have fitted naturally into this *Proceedings*. The gain, however, is marked; for it brings to the attention of the public strikingly the views of experts on this imminent problem.

Engineers are noted for their self-control in not delivering themselves of "half-baked" opinions, especially on engineering matters. This has been especially noticeable in the matter of the Mississippi Flood discussions. Every other type of proponent of a special plan, every one interested in a particular locality, and many of those with a weather eye toward the political effect, have aired their views publicly.

Not so the engineer. He realized that only well-considered plans could be safely put forward. He realized also that well-considered plans are not the product of hysteria or enthusiasm, but the result of long and intensive study.

Value of Papers

Such are the papers here presented. No one viewpoint is emphasized at the expense of any other. Leaders and authorities in many fields of engineering are represented. The result is a well-rounded Symposium, covering all the important phases of this vast problem by recognized leaders of the profession.

The Society is grateful to these men for their co-operation in this worthy matter. It is glad of the opportunity to be of service—and of no small service. It presents these papers in the hope that they will receive thoughtful study, sympathetic analysis, and helpful criticism. By so doing, the Mississippi River Symposium will indeed accomplish its definite object in promoting an economic solution of one of the most important National engineering difficulties of the day.

Charles D. Marx Elected Honorary Member

By action of the Board of Direction at its Columbus Meeting, another prominent American engineer has been added

to the list of Honorary Members in the person of Charles D. Marx, Past-President of the Society.

Professor Marx, or "Daddy" Marx as he is affectionately known to a great many members, has given distinguished service to the Society, having been Director from 1904 to 1906, Vice-President in 1912 and 1913, and President in 1915. His wide circle of friends will rejoice in this deserved honor for him, which will be conferred at the time of the Annual Meeting in January. A more complete account of his life and work follows:

Charles David Marx

Charles David Marx, Past-President, Am. Soc. C. E., was born at Toledo, Ohio, on October 10, 1857. From 1863 to 1866, he had private instruction in Amsterdam, Holland, where his father was American Consul. From 1866 to 1871, he was a pupil in the public schools at Toledo, Ohio, and from 1871 to 1876, a student at the Karlsruhe (Baden, Germany) Realgymnasium, from which he was graduated in 1876. Mr. Marx entered Cornell University, Ithaca, N. Y., in the fall of 1876, and was graduated therefrom in 1878, with the degree of Bachelor in Civil Engineering. He then returned to Karlsruhe where he entered the Karlsruhe Polytechnic as a student under Sternberg, Baumeister, and Grasshof. During 1880 and 1881, he acted as Assistant to Baumeister, and, in 1881, he passed the Diplom Examination as Civil Engineer.

On his return to the United States, Mr. Marx became, successively, Levelman, Transitman, and Assistant Engineer on the proposed Western Extension of the Boston, Hoosac Tunnel and Western Railroad. Later, he was U. S. Assistant Engineer, first on the Missouri and then on the Mississippi River Improvement. In 1884, he was called to Cornell University as Assistant Professor of Civil Engineering, where he remained until 1890. Between 1884 and 1890, he also acted as Chief Inspector of Public Improvements in Rochester, N. Y., and as Principal Assistant Engineer to the late Emil Kuichling, M. Am. Soc. C. E., on a number of projects.

In 1890 Professor Marx accepted a call to the Chair of Civil Engineering at the University of Wisconsin, from which he transferred, in 1891, with the opening of that institution, to Leland Stanford, Jr., University. He held this position until 1923, when he was retired as Professor Emeritus.

During his residence in California, Professor Marx has been connected, as Consulting Engineer, with a number of important projects. He was the first Chairman of the State Water Commission organized in 1911, and had a large part in framing the Water Laws of the State of California. As a citizen of the Town of Palo Alto, he has been connected for many years with its administration, having been a Town Trustee, President of the Board of Trustees, and for many years under a new charter, Chairman of the Board of Public Works.

He has contributed to the *Transactions* of the American Society of Civil Engineers, with his colleagues, Charles B. Wing, M. Am. Soc. C. E., and Leander M. Hoskins, Esq., papers on the flow of water in pipes,* and has taken part in discussions of other papers. As one of the original members of the Society for the Promotion of Engineering Education, Professor Marx has also contributed to its *Transactions*, and has written many technical reports. He is Chairman of the Arch Dam Committee of Engineering Foundation.

The honorary degree of Doctor of Laws (LL. D.) was conferred on him by the University of California, and that of Doctor of Engineering (D. Eng.) by the Technical High School of Karlsruhe.

Professor Marx is a Past-President of the San Francisco Section of the American Society of Civil Engineers; Past-President of the Pacific Association of Consulting Engineers; President of the Joint Council of Engineering Societies of San Francisco; and Member of the Western Society of Engineers. His clubs include the University Club, Menlo Country Club, Monterey Peninsula Country Club, and Commonwealth Club of California.

November Society Meeting on Aerial Tramways

Cableway transportation has come into a considerable use by engineers, for the economical solution of various material handling problems. Those in the mining and lumbering industries are perhaps the best known. A complete analysis of the whole general topic, together with mathe-

* "Experiments on the Flow of Water in the Six-Foot Steel and Wood Pipe Line of the Pioneer Electric Power Company, at Ogden, Utah", *Transactions*, Am. Soc. C. E., Vol. XL (1898), p. 471; Supplementary Paper, Vol. XLIV (1900), p. 34.

matical derivations of various design formulas, is well covered in the paper by F. C. Carstarphen, M. Am. Soc. C. E., in the November *Proceedings*.

This formed the basis for consideration at the regular Society Meeting on November 2, 1927. In the absence of the author, the subject was ably presented by D. B. Steinman, M. Am. Soc. C. E., who used numerous slides to illustrate the theory as well as practice of cableways. Mr. Steinman briefly described the contents of the paper, emphasizing the primary factors distinguishing the various types of apparatus.

In the open discussion following, W. G. Grove, M. Am. Soc. C. E., illustrated the application of ropeways to conditions on the Island of Trinidad, South America, where both crude and refined asphalt is transported from the famous pitch lake to tide-water for shipment.

The meeting was conducted by Robert Ridgway, Past-President, Am. Soc. C. E., in the chair. The attendance numbered about 85.

General John J. Carty Wins John Fritz Medal

The John Fritz Medalist for the year 1928 is John J. Carty, a noted electrical engineer, and Vice-President of the American Telephone and Telegraph Company. He was the unanimous choice of a Board representing the four Founder Societies, which met on October 21.

It will be remembered that the John Fritz Gold Medal is in memory of a famous engineer long a leader in the American iron and steel industry. It is awarded yearly. The roster of names of those who have been previously chosen embraces some of the most eminent men in this and foreign countries.

The present award to John Carty is "for achievement in telephone engineering." Indeed his has been a most notable success in this work. To this field he has devoted almost fifty years of service, most of it with the American Telephone and Telegraph Company (or its subsidiaries), of which he has been Chief Engineer for twenty years. Under him, many of the most notable developments in telephone engineering have been carried out.

General Carty received his military title for service during the World War, in which he served on the Staff of the Chief Signal Officer in the United States Army. In addition, he has received Doctors' Degrees from a half dozen prominent Universities; The Franklin Medal; The Edison Medal; and various foreign orders. He is Past-President of the American Institute of Electrical Engineers.

The official presentation of this award will take place during February, 1928, at the time of the Annual Meeting of the American Institute of Electrical Engineers. At this time the medal will be presented by Robert Ridgway, Past-President, Am. Soc. C. E., who is Chairman of the Board making the award. Many members will doubtless wish to cooperate in thus honoring a great American engineer.

Engineers for the Interstate Commerce Commission

One of the most important Government activities affecting business and commerce, and through them the general welfare of the country at large, is the Interstate Commerce Commission. Much of its work is of a technical nature, involving the knowledge of engineering principles. Thoughtful men have often been struck by the anomaly that this body does not include several competent engineers. In a recent letter to The President, the viewpoint of the Society on this matter is ably presented by President Stevens, as follows:

"THE PRESIDENT,
"The White House,
"Washington, D. C.

"SIR:

"I have the honor, as President of the American Society of Civil Engineers and by the authority of such Society, to respectfully call attention to the very obvious logic that the personnel of the Interstate Commerce Commission should include experienced railroad Civil Engineers.

"Many of the problems which are now, and which in the future will come before that Commission, are very largely engineering matters, which require engineering analysis for their proper understanding and solution; such as: Valuation, Permits for the construction of new lines, Orders for signals and train control installations, analysis of physical features involved and economies of proposed mergers, and, in fact, railroad economics of endless variety, which are the distinct field of Civil Engineering research, and which are of vast importance to the Public and the Carriers.

"While the Commission has its staff of engineers, it should have among its Members sitting at its hearings one or more trained and practically experienced railroad Civil engineers, who by participation in such hearings would bring out and clarify many points of vital significance, which otherwise might and probably would be overlooked, and which would be of importance in arriving at a correct and just decision of the problems at issue.

"In the event that appointments of new Members to this tremendously important Commission will be made in the near future, the American Society of Civil Engineers respectfully asks your serious consideration of the suggestion as made in this communication, the importance of which it again emphasizes, and to assure you that the Society will at any and all times be very pleased to submit a list of names of broad-minded, experienced railroad Civil engineers, for your assistance in making selections for nominations of future members of the Interstate Commerce Commssion.

"I have the honor to be,

"Very respectfully
"JOHN F. STEVENS (Signed)
"President".

Award of Prizes

The report of the Committee on Prizes for the current year was made to the Board of Direction at the October Meeting, as follows:

"Your Committee on Prizes makes the following recommendation of awards for papers printed in Volume 90 of the *Transactions*.

"The Norman Medal to B. F. Jakobsen, M. Am. Soc. C. E., for his paper, 'Stresses in Thick Arches of Dams'.

"The J. James R. Croes Medal to H. C. Ripley, M. Am. Soc. C. E., for his paper, 'Relation of Depth to Curvature of Channels'.

"The Thomas Fitch Rowland Prize to L. S. Stiles, M. Am. Soc. C. E., for his paper, 'Pipe Tunnel under Gowanus Canal, Brooklyn, N. Y.'

"The James Laurie Prize to John R. Baylis, Assoc. M. Am. Soc. C. E., for his paper, 'Corrosion of Concrete'.

"The Arthur M. Wellington Prize to John A. Miller, Jr., Assoc. M. Am. Soc. C. E., for his paper, 'Increasing the Efficiency of Passenger Transportation in City Streets'.

"The Collingwood Prize to William Breuer, Jun. Am. Soc. C. E., for his paper, 'Trend of Construction Cost of Certain Public Utilities'.

"Respectfully,

A. MARSTON,
T. L. CONDRON,
HARDY CROSS,
Committee on Prizes."

The Board concurred in the recommendation of the Committee. Accordingly these prizes will be awarded at the Annual Meeting in 1928.

A GREAT STOREHOUSE OF ENGINEERING INFORMATION*

Free Service and Pay Service

A fact not generally understood about the Engineering Societies Library—in particular, not realized by many of the great industries of the country—is that it is a free public institution. To utilize its valuable facilities, one does not have to be a member of the National Engineering Societies (which shoulder its financial deficit each year). Any one, at any place in the world, can use the library. A man in California, or in South America, or in Persia, can write or cable to the Library Staff and receive information on the same basis as any engineer living in New York.

For example, a few months ago an American mining engineer in China needed additional geological information about a district which he was about to explore. He cabled his need to the Engineering Societies Library and the next steamer brought him the data he wanted.

A phosphorus company in Alabama wished to obtain a translation from the Norwegian of an article on cement about which it had heard. The company wrote to the Engineering Societies Library; the article was located, and a translation made and forwarded.

A salt company in Syracuse, N. Y., was anxious to learn the exact date of a certain patent pertaining to the industry. After telephoning the Library an answer was given within half an hour.

The requests for information which come in daily to the Library Staff range interestingly over the whole field of engineering and its allied industries.

* This item is the second of a series for the information of the membership of the work of Engineering Societies Library. The first item was published in the November, 1927, *Proceedings*.

The resources of the library as a storehouse of engineering information permit it to answer almost any technical question more quickly and satisfactorily than any other institution could do it. Care is taken, of course, not to infringe on the functions of consulting engineers nor to attempt service for which professional advice is indicated. A person asking for such service is always advised to consult an engineer specializing in the particular field.

Much of the service supplied by the library is gratis. Any one can go in and consult its reference books or its periodicals. No charge is made for the many telephone requests that can be answered readily or easily. Thousands of inquiries by letter are answered yearly without charge—inquiries that require in the aggregate a high degree of care and attention.

The charges that are made on individual requests are those for which special effort is necessary. Photoprints, for example, are 25 cents each. Extensive reference searching on specialized subjects is done at $2.00 an hour. Translations from foreign languages are, of course, charged for; French or German at $6.00 per 1 000 words. Books are loaned by mail or express at 5 cents a day, plus the cost of transportation. All these charges are obviously moderate and are calculated merely to pay the actual cost to the Library. In general, they prove to be more or less nominal, for the service rendered is usually of special value to the client. The Library's service is growing steadily and a skilled staff is being built up. There is no reason why this library should not rank as the foremost engineering library in the world. With growth in endowment and co-operation, America should have the best technical library that it is possible to have.

SALARY REVISION FOR NEW YORK ENGINEERS

Society Co-Operation Helps City Employees

The fact that an item of $600 000 has been included in the 1928 Budget for New York City for increasing salaries of engineering employees is a matter of such gratification as to warrant a detailed account of how it was accomplished.

The increase appears to be in the amount of $600 000 but in reality it is larger than this, as may be appreciated from an understanding of the departmental arrangement of the City. The Board of Water Supply (87 engineers); the Board of Education (216 engineers); the Board of Transportation (1 612 engineers), are autonomous units receiving city funds and having power to determine the salaries to be paid their employees. Any change in salaries in these units, therefore, is not reflected in the Budget.

The remaining engineering employees number about 1 685. About 60% of the salaries of these appears as a Budget charge, while the remaining 40% is paid out of moneys collected from assessments for property improvements. These 1 685 men are subject to grades of classification as determined by elaborate Civil Service schedules. An increase in the Budget appropriation, therefore, practically requires an alteration in the schedules, and such alteration will affect all employees except those in the three separate autonomous units. The definite action of the Board of Estimate and Apportionment, moreover, as suggestive to the autonomous units, will undoubtedly result eventually in a total increase in pay of certainly more than $1 000 000, perhaps $1 200 000.

Engineers Interested in Three Groups

For three successive years dignified appeals to the Board of Estimate and Apportionment, in behalf of the engineers and technical employees of the City, met with practically no success whatsoever. The failure in October, 1926, impelled two groups of engineering employees to make an aggressive campaign. These two groups were a local of the American Federation of Labor, made up largely of the employees in the lower grades in the Board of Transportation and the "Association of Engineers of New York, Inc.", consisting of employees of all grades in the Board of Transportation, in the Board of Water Supply, and throughout the entire City service.

Because, too, of the various representations and requests for a general increase in pay, the matter was referred in each of the Departments to the Chief Engineers of those several units. They in their official capacities found it necessary to meet in what has been called informally "the chief engineers' committee", out of which came recommendations to the several Department heads, or Commissions. Thus, there were in reality three groups of engineers involved in the problem.

Salary Conditions Existing

The first step was the collection of the basic facts of the situation with respect to the salaries paid. These may be briefed as follows: The average yearly compensation to 3 600 engineering and technical employees of all grades in the City of New York in the several departments, including the salaries of the several Chief Engineers is $2 600 per annum. In comparison (schedule of July, 1927), 94 grades of mechanics, that is, carpenters, masons, plumbers' helpers, etc., receive as an average at least $2 950 per year, probably more, as this corresponds with a prescribed minimum number of working days. Furthermore, of the 298 city employees receiving salaries of $10 000 per year, or more, only 10 are engineers.

Equally striking is the record of salary changes since pre-War conditions. Notwithstanding an increase in cost of living of at least 64%, the salaries of the engineering service have been increased but 44 per cent. Salaries of the teaching service, however, have been increased 88%; of the mechanics 110%; and of unskilled labor 140 per cent. Obviously, therefore, salaries of the engineering employees were not only out of line with those of other classes but considerably below those warranted by the increased cost of living.

Society's Activities

At the time the effort to secure a rectification of the situation was determined upon, appeals were made to several of the engineering societies. Upon the matter being called to the attention of the Board of Direction of the Society, the President was authorized to appoint a committee to proceed actively in order "that the weight of the American Society of Civil Engineers might be put behind the effort for the betterment of the compensation of engineers in municipal service".

President Davison appointed Mr. J. Waldo Smith as Chairman. He and the Secretary were in constant touch with the workers—city employees—and advised as to the statistics that should be gathered in order to make the appeal effective, and as to methods of procedure that might well be adopted. Perhaps more than anything else, this assured the men actively engaged in the program that their cause had found merit in the eyes of the Board of Direction of the Society and that they might look there for active support.

Largely through the personal interest and efforts of Mr. Smith, although certainly not without the active support of the Chief Engineer and others of the Board of Water Supply, a substantial revision of salaries was made effective in that organization. This example was of great assistance in the approach to other departments.

Unified Program

As has been stated, three groups of employees were involved and obviously there would be three different points of view. It was only after a considerable number of conferences, therefore, and the establishment of mutual confidence that a unified program could be adopted.

In the first place, there was agreement in general on a new schedule of classifications. Secondly, it became evident that the least assailable position was to assert that the salaries of the men at the top were entirely out of proportion with their responsibilities. This decision was not an easy one. It meant the admission by large numbers of men in the subordinate grades that the already fairly large salaries of their Chief Engineers should be increased and should be made the principal talking point rather than a contention that the men in the subordinate grades were failing to receive salaries on which they and their families could live, even modestly. Complete unanimity on this attitude was never attained. Yet when all is said and done the oft-repeated affirmation of the principle with respect to the top men seems to have been the most effective argument.

Methods of Appeal

No extended program of publicity was carried on, although a few scattered letters from individuals appeared in the newspapers. Responsible engineers in the City's employ, well versed in the facts of the case approached the proper officials, placed these facts before them and carried on an individual selling campaign.

The support of the Civil Service Commission was won. It reported that, because of the inadequate salaries, it was unable to supply the demands made upon it. The Director of the Budget was approached and without any attempt to tell him where he should find the money, convincing facts were placed before him to the effect that the increased expenditure was warranted. At this point the proffered services of the Society were called upon and a committee of outstand-

ing members of the community, themselves employers of engineering assistants, was appointed by the New York Local Section.

These gentlemen were made acquainted with the situation and convinced of its merits. Impelled by their conviction they approached individually or in small groups, through favorable channels, the members of the Board of Estimate and Apportionment, the body responsible for the granting—or failure to grant—the requested increase.

Three arguments presented seem to have been potent. One employer announced that the average salary paid to the municipal employees was much less than that paid in his organization. Another one (Vice-President of his firm) stated he had no difficulty in obtaining satisfactory assistants because it was known that promotion to generous salaries was not only possible but probable for capable employees. A third demonstrated that contractors had materially decreased their bids on work where the engineering organization was well paid and thus commanded the services of capable men.

No spokesman or organizer of any kind was employed. No money was paid to any one for his services. The press, however, was thoroughly informed by communications addressed to the technical editors, and the Board of Estimate itself was presented with communications in support of the program from the New York Chamber of Commerce, the Society of Municipal Engineers, the Brooklyn Engineers' Club, the American Association of Engineers, the American Society of Civil Engineers, and the two organized groups of New York City engineering employees.

Results of Efforts

The result of the campaign seems to have been the personal conviction of each member of the Board of Estimate and Apportionment that the situation necessitated action. From their point of view, however, the full equality was not attainable at one stroke. The inclusion of $600 000, therefore, although less than was warranted under the circumstances, was all that seemed practicable and, accordingly, resolutions were prepared by several of the interested groups to the effect that this amount received approval.

The Board of Direction of the Society has authorized the appointment of a Committee on the Salaries of Public and Quasi-Public Employees. The practical procedure for that Committee seems now to have been demonstrated by the experiment carried on in New York. In brief, it is proposed that the Committee shall consist of a few members of the Society, altruistically minded and without personal affiliation to hamper them; that the committee shall gather general statistics; but more particularly that it shall give advice and support in specific cases and enlist the active help of members of the Society through the medium of the several Local Sections in the districts concerned.

Such a committee may necessarily have only an advisory character. The success of the experiment in New York seems to prove beyond question that the active workers must come first from the employees in question themselves; and, second, that disinterested prominent local members of the Society must support them. The employees must see to it that they have the necessary data to prove their case and that there is a large degree of unanimity of action, as in the preparation of schedules satisfactory to all concerned; and the disinterested members of the Society must hold themselves in readiness to make the necessary and convincing contacts with responsible City officials.

ENGINEERING RESEARCH AND THE ENGINEERING FOUNDATION*

Exceptional Research Problems

Since 1914, when Ambrose Swasey established the Engineering Foundation, the idea of such a National research institution has gained ground steadily and surely. The income from the Foundation in 1915 was $5 000. It has now increased to $30 000. Mr. Swasey's several gifts totaled $500 000. Other outstanding gifts to the Foundation have been $50 000 from Henry R. Towne, $50 000 from Edward Dean Adams, and $10 000 from Seeley W. Mudd. Many donations of equipment, materials for research, services, and money have been made in connection with the co-operative projects in which the Foundation has participated. Several wills of living persons are known to contain bequests for the Foundation.

It is pertinent to inquire what advantage for research such an institution as the Engineering Foundation enjoys

* This item is the second of a series for the information of the membership of the work of Engineering Foundation. The first item was published in the November, 1927, *Proceedings*.

over individuals and business organizations. In general, the advantages are similar to those which the Rockefeller Foundation possesses in its well-known work of safeguarding health. They are briefly: (1) The advantage of long views and broad purposes; (2) the advantage of doing things on a large scale; (3) the advantage of easy co-operation with other institutions; (4) the advantage of not having to produce a profit; (5) the advantage of conservation of funds, continuity of service, and unified direction by experienced trustees; (6) the advantage of flexibility of purpose, avoiding frozen funds and restrained policies; and (7) the advantage of the prestige of the four Founder Engineering Societies.

Specific instances of the advantages for effective research possessed by the Engineering Foundation are not difficult to set forth. In modern engineering there are numerous problems constantly arising which no individual or no industrial corporation feels justified in attacking. No individual or company may have the time, equipment, or ability to conduct a particularly difficult piece of research. Frequently a company hesitates to attempt, single-handed, the solution of a problem to which many companies should contribute, but for which no one takes the lead. In such a situation the Engineering Foundation can step forward as a detached, non-commercial party and invite co-operation, which is usually given promptly and willingly.

Sometimes doubts and obscurities of technical procedure exist which are positively harmful, but which no individual or company feels it a duty to clear up. Such conditions arise in modern industry as a consequence of the rapid changes and adjustments always taking place and of the extremely diversified and disjointed nature of America's tremendous engineering undertakings. Leadership out of such predicaments can best be initiated by an agency like Engineering Foundation. It is to the best interest of the country's industries, not to mention the interests of the Engineering Profession and the public at large, that such a free, unbiased institution exists to act as a clearing house for engineering research.

More detailed examples of the policy and accomplishments of the Engineering Foundation will be given in a later article. In the dozen short years of its history it has been as busy and active as any of its sponsors could wish. There will always be plenty of opportunities for it to exercise its functions, even when its endowment reaches the $5 000 000 that it hopes to attain.

Finances of Local Sections

One of the important subjects under consideration at the Columbus Meeting of the Board of Direction related to the proper handling of dues and allotments for the Local Sections of the Society. This matter was presented by Henry D. Dewell, Chairman of the Committee on Local Sections. The Committee recommended the adoption of various principles affecting the financial relations of the Society, and of the Local Section within its own sphere.

In all, six general conclusions of the Committee were presented for discussion and individually adopted, as follows:

(1).—The amount of dues for any one Local Section is solely a matter for the individual Section to establish.

(2).—No Section can attain its maximum possibilities of service to its members on dues of $1.00 per member per year, except through the circumstance of being located in a community in which another established Engineering Society is satisfactorily functioning.

(3).—Subject to the conditions mentioned in (2) dues of $3.00 per member per year appear reasonable for those Local Sections who desire to render maximum service to their members.

(4).—Except in the case of State-wide organizations, the membership of a Section should be divided into two classes, resident and non-resident, and the dues for the non-resident class should be less than the dues for the resident class.

(5).—The maximum allotment of Society funds should be given only to those Sections whose dues for resident members are at least $2.00 per year.

(6).—The allotment of Society funds should be given only to those Sections which present to the Board of Direction, through its Committee on Local Sections, a financial statement sufficient in detail to show accurately the annual receipts in amount and character, the annual disbursements in amount and character, and the current assets.

Asiatic Railway Travel

Not long since, there came to the Secretary's office from one of the Society's distant friends—it happened to be a Russian railway engineer living in Manchuria—a rather striking railroad folder. It was dressed up in red and brown and

gold, with maps, railway trains, pagodas, and brown bears; but the interesting thing about it was the information that the Trans-Siberian Express runs through trains connecting Paris and Peking in 12 days.

It appears, however, that this trip cannot be made without change at the Russian-Polish frontier. Presumably, the standard track gauges for the two countries do not agree.

This interesting folder written in English and well illustrated, gave a pictorial cross-section of a vast strip of country. It showed large important buildings, strange people, and still stranger living conditions. There was nothing inferior, however, about the equipment or railroad plant shown. Moreover, the examples of bridge engineering were apparently modern and of large magnitude.

Members who are contemplating a trip to Siberia would find in this little handbook, a fascinating prospect with complete details of fares and baggage rates, express charges, rates for meals, and all other necessary information. In looking over this folder, one gets a distinct impression of American influence in the Chinese Eastern Railway.

This handbook is on file at Society Headquarters for the use of any interested members.

Society Representatives

The following members have accepted the responsibility of representing the Society in various capacities:

Southern Appalachian Power Conference, Chattanooga, Tenn., October 13-15, 1927: N. W. Dougherty, E. L. Sayers, M. O. Leighton, Members, Am. Soc. C. E.

Inauguration of William Mather Lewis as President of Lafayette College, October 20, 1927: Frank Oliver Dufour, M. Am. Soc. C. E.

Traveling Annual Meeting of the American Civic Association: C. M. Spofford, M. Am. Soc. C. E.

Columbus Meeting

The Fall Meeting held October 12-15, 1927, in Columbus, Ohio, is generally considered to be one of the best meetings of the Society in recent years. At least, the attendance of nearly 700 (635 registered) bears out this feeling. The meeting opened with a half-day session on the Columbus Water Supply and Purification Methods, John H. Gregory, M. Am. Soc. C. E., presenting a paper on "The O'Shaughnessy Dam and Reservoir," and Charles P. Hoover, Esq., describing the "Water Purification and Water-Softening Methods."

Through the co-operation of the Waterways Division, a Symposium occupying one and one-half days was staged, covering Flood Control with Special Reference to the Mississippi River. On account of the interest of the country at large and of engineers in particular these sessions were unquestionably the major drawing card of the meeting, as was evidenced by the attendance of the Hon. Dwight F. Davis, Secretary of War, who addressed the members at a Dinner Meeting on Wednesday evening, October 12.

In addition to the topics mentioned, the Sanitary Engineering, Highway, and Structural Divisions held meetings which were well attended, averaging about 90 each. Supplementing the array of technical information, the Local Members provided diversification by arranging automobile drives, particularly for the ladies, and two dinners; one of these was followed by dancing, and the other by an address on the "Story of the Stars", by Julius F. Stone. Last, but not least, an all-day excursion by automobile on Friday, October 14, included a visit to the dams and reservoirs of the Columbus Water Supply.

The meeting officially closed on Saturday, October 15, when a considerable number took advantage of the opportunity to see the football game between Ohio State and Northwestern Universities, and to examine the great Ohio State Stadium. The success of the entire week reflects no little credit on the effective efforts of the local members, especially the Committee of Arrangements.

A War Memorial for American Engineers

Approximately eighty members of the Founder Societies died in service overseas during the World War. No memorial to these engineers has been set up. A unique and fitting possibility was discovered during the summer.

While Edward Dean Adams, F. Am. Soc. C. E., was in Belgium last June as delegate of the Founder Societies to the celebration of the Five Hundredth Anniversary of the University of Louvain, he learned that the new Louvain Library Building being given by Americans lacked two important features—a clock and a carillon for its tower. No Belgian tower is complete without them. For centuries the bells of the "singing towers" of the "Low Countries" have inspired, enter-

tained, and educated the people. America's beautiful gift must be complete when dedicated next May or June.

Gift of Clock and Carillon

Dr. Adams at once saw the opportunity for a peculiarly acceptable expression of good-will from engineers of the United States to their Belgian friends, and for a beautiful, perpetual memorial to their fellows—those who had made the supreme sacrifice in foreign service during the great war. He secured the privilege of providing the clock and the carillon as gifts from American engineering societies.

The time is short, but sufficient, for prompt action. Approval of the project has been given by the Joint Conference Committee, composed of the Presidents and the Secretaries of the Founder Societies. A fund of $80 000 is needed. This will provide a clock with four faces, a three-octave carillon of thirty-six bells, installed and guaranteed for ten years, and an ample endowment for perpetual operation and maintenance.

General Participation

An opportunity is now offered to each member of these Societies and to the families and friends of the deceased engineers to contribute to this joint fund by sending checks, drafts, or money orders payable to United Engineering Society, at 29 West 39th Street, New York. The subscription lists close February 1, 1928. Contributions of $5.00 or more, or any sums which donors feel able to give, will be acceptable. Expenses are being separately provided for, so that every dollar given will go into the memorial. The names of all subscribers, without mention of amounts given, will be recorded in a beautiful memorial volume to be deposited in the Louvain Library. A copy of this book will be placed in the office of each Society.

Names of the Americans to be memorialized, so far as they can be learned, will be inscribed on suitable tablets to be placed in the Library Tower. The Committee desires to obtain the names and records of all American engineers who died in any branch of foreign service for their own country or any of its Allies, during the World War from its beginning in 1914. Names and records of such engineers, whether or not members of one of the Founder Societies, are requested.

Crowning Feat for Engineers

Here is both privilege and patriotic obligation fortunately reserved for American engineers to place the crown upon a beautiful permanent contribution to European higher learning, including the engineering and scientific branches. The project has grown out of the greatest relief enterprise connected with the war. As this was organized and administered under the masterful leadership of American engineers, it is fitting that American engineers should put the finishing touches to this gift of peace. The project has been well received, and its success is assured.

The Committee on this War Memorial to American Engineers comprises: George W. Fuller, M. Am. Soc. C. E., representing the Civil Engineers; Arthur S. Dwight, representing the Mining Engineers; Charles M. Schwab, representing the Mechanical Engineers; Arthur W. Berresford, representing the Electrical Engineers; George Gibbs, M. Am. Soc. C. E., representing United Engineering Society; and Edward Dean Adams, representing Engineering Foundation, *Chairman*.

PAID-UP MEMBERSHIP

Revised Schedule Shows Further Advantages

The plan for paid-up membership has been changed slightly—to the advantage of any member who is in a position to avail himself of it. Somewhat lower rates than formerly are now effective. The plan provides for paying all future Society dues in one lump sum, which is less in amount than that fixed by the Constitution for compounding dues.

Through an arrangement with an insurance company of excellent standing, an annuity in favor of the Society may be purchased, the net return from which is equivalent to an investment at rates varying from 4½ to 12½ per cent. The actual amount payable varies according to the age of the member, to the dues he has already paid, and to the length of time before he will be constitutionally exempt from payment.

Tabular Computation

The accompanying table indicates the approximate cost for a member to avail himself of this plan. The amounts shown are in all cases maximum figures and are subject to discount depending on the time of year at which the arrangement is effected.

Dec

AMERICAN SOCIETY OF CIVIL ENGINEERS IN LIEU OF ANNUAL DUES.

(Figures shown are for immediate first payment and are subject to 5% pro rata discount for completion of

American Society of Civil Engineers in Lieu of Annual Dues.

(Figures shown are for immediate first payment and are subject to 5% pro rata discount for completion of contract prior to December 31 of any year.)

(For $25 per year Annuity Contract add 25%; for $15 per year Annuity Contract deduct 25%.)

Nearest Age at Issue of Contract.	Years of Dues to Be Paid.																										Nearest Age at Issue of Contract.
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	319	325	....	....	31
32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	316	324	....	....	32
33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	318	316	323	....	....	33
34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	307	312	317	321	325	....	34
35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	301	306	311	315	319	323	....	35
36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	300	305	309	313	317	321	324	36
37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	299	303	307	311	315	319	322	37
38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	297	301	305	309	313	317	320	38
39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	295	299	303	307	311	315	318	39
40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	293	297	301	305	309	313	....	40
41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	291	295	299	303	307	....	....	41
42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	289	293	297	301	....	....	....	42
43	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	287	291	295	....	....	....	....	43
44	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	285	289	....	....	....	....	....	44
45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	283	....	....	....	....	....	....	45
46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	281	....	....	....	....	....	....	46
47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	278	....	....	....	....	....	....	47
48	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	275	....	....	....	....	....	....	48
49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	272	....	....	....	....	....	....	49
50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	269	....	....	....	....	....	....	50
51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	266	....	....	....	....	....	....	51
52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	262	....	....	....	....	....	....	52
53	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	258	....	....	....	....	....	....	53
54	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	254	....	....	....	....	....	....	54
55	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	250	....	....	....	....	....	....	55
56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	56
57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	57
58	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	58
59	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	59
60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	60
61	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	61
62	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	62
63	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	63
64	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	64
65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	65
66	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	66
67	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	67
68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	68
69	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	69
70	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	70
71	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	71
72	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72
73	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	73
74	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	74
75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	75
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
Nearest Age at Issue of Contract.	Years of Dues to Be Paid.																												Nearest Age at Issue of Contract.

To use the table, determine the nearest age of the applicant; also the number of annual payments he has yet to make under the terms of the Constitution (Article IV, Section 7). With these data, the body of the table gives the maximum amount to be paid. This figure applies only if the arrangement is completed on December 31 of any year; if completed before December 31, it is subject to a discount at the annual rate of 5% for the remainder of the year. It assumes the member has paid his current year's dues.

To take a specific example: In the case of a member desiring to pay his $20 annual dues as of December 1, 1927, the following data apply: Born August, 1876; became a Corporate Member December 7, 1907. The number of years' dues to be paid varies for different conditions according to the Constitution; in this particular instance, a total of 35 years is required before exemption. He has already paid 21 (in advance), leaving 14 payments yet to be made. He is now 51 years old. With these data, the table shows that on December 31, 1927, the amount of $203 will pay all his future yearly $20 dues. This amount is subject to a discount for one month at the rate of 5%, or $1/12 \times 0.05 \times 203 = \$0.85$, leaving $202.15 as his payment on December 1, 1927. This compares with a total of $280 for 14 years payment under the normal plan. The payments for other amounts of annual dues ($15 or $25), would be in proportion.

Economies

A significant feature of the table is its diagonal nature. The condition for every member is found in some one diagonal line and remains in this same diagonal throughout his life. That is, with each added year there is one year less of dues to be paid. This diagonal then marks the variation in the cost of paid-up membership to this particular member year after year, pointing to the period when the increasing economy may make it more advisable for him to adopt the plan. The upper end of this diagonal chart marks the limit of use for the Constitutional payment for compounding dues. Beyond this, therefore, it would be cheaper for a member to pay $325 as permitted by the Constitution.

In effect this plan is a tri-partite arrangement, involving the member, the Society, and the Insurance Company. The member pays the money to the Company which agrees to pay the Society the $20 annually on January 1 for as long as the member is required to pay dues or until his previous decease. Thus, the Society will not handle the money (checks to be payable to the Insurance Company), but will furnish the member with application and complete data.

The Secretary's Office is prepared to furnish further details of the plan to any member interested.

Meetings of the Board of Direction

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

The Board met at the Neil House, Columbus, Ohio on October 10, 1927; President John F. Stevens in the chair; George T. Seabury, Secretary; and present, also, Messrs. Bell, Braune, Brillhart, Chevalier, Davison, Dennis, Dewell, Dufour, Gilman, Hammond, Hatton, Hazen, Hoyt, Huber, Lucas, Morgan, Paul, Raymer, Ridgway, Sawyer, Spofford, Tabor, and Williams.

Approval of Minutes of Board

On motion, the minutes of the meetings of the Board of Direction held on July 11 and 12, 1927, were approved.

Approval of Minutes of Executive Committee

On motion, the minutes of the meeting of the Executive Committee held on September 27, 1927, were approved, and the actions outlined therein were adopted as the action of the Board.

Past-President Marx Elected Honorary Member

Canvass of the Honorary Membership ballots resulted in the election of Charles David Marx, Past-President, Am. Soc. C. E., as an Honorary Member of the Society.

Amendment to Article V, Section 7, of the By-Laws

At the July Board Meeting notice was given of a proposed amendment to Article V, Section 7, of the By-Laws. After discussion, the proposed amendment was adopted, and Article V, Section 7, as amended, reads as follows:

"7.—Among the privileges offered to the members of Student Chapters are:

"(*a*).—Individual subscription to the *Proceedings* of the American Society of Civil Engineers at a special price of $3 per year;

"(*b*).—To receive at cost, on request, copies of such separate papers as may be printed in pamphlet form;

"(*c*).—To use on all official stationery the special official emblem prescribed in Section 8;

"(*d*).—A membership card of special design, prescribed in Section 9, to be issued annually;

"(*e*).—The right (except of Freshman or first-year students) to wear a badge of design prescribed by the Board of Direction subject to such further regulations as may be adopted by each Student Chapter with respect to its own members;

"(*f*).—The right to attend the meetings and accompany inspection trips and excursions arranged for members of the American Society of Civil Engineers;

"(*g*).—Provision for the publication of requests for summer employment during the college course, or for permanent engagement after graduation on such terms as the Board of Direction may prescribe; and

"(*h*).—The privilege of obtaining assistance in securing for Chapter Meetings speakers qualified to speak with authority upon matters of interest to engineering students.

"(*i*).—Graduates recommended by the heads of the Civil Engineering Departments of their respective Engineering Colleges, may upon payment of $4.50 continue affiliation with their Student Chapter until the first day of the second January following graduation. During this period they shall receive the *Proceedings* and shall have the privilege of membership in any Local Section in the territory of which they may locate."

Thomas J. McMinn

The Secretary was instructed to write to the widow of Thomas J. McMinn, M. Am. Soc. C. E., former Assistant Secretary of the Society, expressing the appreciation of the Society for the service he rendered during his life and regret at his passing.

Report of Nominating Committee

The Secretary read the following report which he had received from the Nominating Committee in accordance with Article VII, Section 4, of the Constitution:

"In accordance with Article VII, Section 4 of the Constitution, I beg leave to report that the Nominating Committee at a meeting held on October 8th, 1927, in Columbus, Ohio, nominates unanimously Lincoln Bush of East Orange, N. J., as the official nominee for President of the American Society of Civil Engineers for the year 1928.

"In response to the notification, Mr. Bush, in a telegram dated October 8th, gratefully accepts the nomination.

"G. M. BRAUNE,
"*Secretary* of Nominating Committee for 1927."

Report of Committee on Meetings and Publications

Upon recommendation of the Committee on Meetings and Publications the Spring Meeting of the Society in 1929 was fixed for Dallas, Tex., to be held some time in April.

Report of the Committee on Professional Conduct

The Committee on Professional Conduct reported in regard to four matters under consideration by the Committee.

Report of Committee on Local Sections

The Committee on Local Sections presented a report outlining its activities in obtaining information about Section activities, membership dues, assets, etc., and on the basis of the data furnished, recommended that the following Local Sections be considered in the preparation of the 1928 budget for a maximum allotment of $3.00 per member in good standing: Colorado, Duluth, Georgia, Los Angeles, North Carolina, Sacramento, San Francisco, Texas, Western Washington.

This recommendation was approved with the understanding, as explained by the Committee, that this list might be revised in its final report to be submitted at the Annual Meeting.

Upon recommendation of the Committee, the Board approved six principles relating to the allotment of Society funds to Local Sections.*

The recommendation in the report of the Committee that the 1928 Budget contain an item of $2 000 for the purpose of paying mileage for visits by Vice-Presidents to the Virginia, Oklahoma, Kansas State, Arizona, and Miami Sections, was adopted as a recommendation to the Executive Committee in its consideration and preparation of the Society's 1928 Budget.

New Soils Committee Authorized

Upon the recommendation of the Research Committee the appointment of a Soils Committee was authorized. It was recommended that the activities of this Committee be directed to an investigation of the physical properties and behavior of the several soil formations encountered in engineering practice, with a view to the ultimate determination of a recommended procedure in the treatment of foundation problems.

It was further recommended that the initial work of the Committee should be devoted to ascertaining a method for the identification of the several soils and their physical properties, with the idea of subsequently forecasting their probable behavior under the application of the loads of engineering structures.

Report of Committee on Districts and Zones

In accordance with the recommendation of the Committee on Districts and Zones no change was proposed in the District and Zone boundaries for next year.

Committee on Sales Engineering

The Committee to Report on Sales Engineering in connection with applications explained that a questionnaire had been prepared which, it was suggested, be printed and forwarded, for a few months' trial, to every applicant whose experience includes salesmanship.

On motion, the Secretary was authorized to print copies of the following questionnaire and to issue it for a few months as suggested:

"DEAR SIR:

"It is noted that a part of your experience as expressed in your application for consideration in connection with membership in the Society indicates engagement in Sales or Sales Engineering.

"The qualifications for membership involve certain duration of active practice in the Engineering Profession, and of responsible charge of engineering work. In so far as it is your intention to submit the time spent in sales or sales promotion or sales engineering as properly to be included under the designation of active practice or responsible charge of engineering work, will you please indicate below the specific nature of such employment.

"GEORGE T. SEABURY,
"Secretary."

* See p. 388.

"1. Engaged in sales engineering from.....to.....
"2. Commodities sold:.....
"3. Is the commodity one which is applicable properly to many situations { Yes..... No .....
or is the commodity one which is especially designed as a result of a special investigation and to perform a sound engineering duty in only that instance? { Yes..... No .....
"4. Does selling service include: —Analysis of specific problems.
(Strike out those that do not apply to this commodity.) —Advice as to practicable solution.
—Report of practicable solution.
—Design of practicable solution.
—Drawings of practicable solution.
"5. What portions of these services are rendered by you as salesman?

.....
and what portions by a staff maintained for this purpose?

.....
"6. Does your work as salesman include supervision of installation or is this done by an installation department? Please detail.

.....
"7. Does your work as salesman involve expectation of so much continued observation as may be necessary to bring about satisfactory functioning of the commodity or is this done by others? Please detail.

.....
"8. Any further data indicating the engineering nature of your work in selling or promoting sales may be elaborated upon here or on the reverse of this sheet.

.....

.....
Signature"

Committee on Prizes

On motion, the recommendations of the Committee on Award of Medals and Prizes were adopted.*

Mississippi River Flood

The question of the Mississippi River Flood was discussed at length, after which the following motion was adopted:

"That a Committee of five especially qualified engineers, to be appointed by the President, and of which the President shall be Chairman, be authorized, the services of which shall be available for whatever contribution toward the solution of the Mississippi problem may seem to be appropriate on the part of the Society, and that funds of the Society to an amount not exceeding $5 000 in this calendar year be authorized for this purpose, the regulation of such funds to be at the discretion of the Executive Committee."

* See p. 384.

Biographical Sketches of Official Nominees

The following are brief biographical sketches of the Official Nominees for the offices to be filled at the Annual Election of the Society on January 18, 1927:

Lincoln Bush

(Official Nominee for President)

Born December 14, 1860, Palos Township, Cook County, Ill. (Country Schools; Cook County, Ill., Normal School, M. A., 1880; (Teacher 1880-1884); Univ. of Illinois, B. S. in C. E., 1888; D. Eng. 1904 (Honorary))—1888-1889 Instrumentman, Wyoming Div., Union Pacific Ry., and Field Topographical Projector on location, Wasatch Mountain Section, Pacific Short Line, between Ogden, Utah, and the Green River, Wyoming: 1890-1891 Asst. Instr. in Mathematics, Univ. of Illinois, and Asst. Engr. on shop and field inspection of bridges for Morison and Corthell, Cons. Engrs.: 1892-1896 Asst. Engr. on design and estimates of bridges, Western Office of The Pittsburg Bridge Co.: 1896 (half year) Asst. Engr. on masonry design for bridges, Chicago Drainage Canal Board: 1897-1899 Asst. to Bridge Engr. and Acting Div. Engr., Iowa Div., Chicago & North Western Ry.: 1900-1908 Bridge Engr., Prin. Asst. Engr., and Chf. Engr., Delaware, Lackawanna & Western R. R., which services were instrumental in the rebuilding and modernizing of many of the facilities of that Company; Inventor of the Bush Train-Shed and Bush type of concrete roadbed construction; made practical and economic use of confined sand for lowering great weights through long distances with safety and certainty: 1909-1925 (except World War Service, 1917-1919) Cons. Engr. and Contr., principally railroad terminal facilities, bridges, public utility facilities, serving several contracting companies as Chf. Engr.: 1917-1919 World War Service, Assoc. Officer in Chg. of Eng. Div., Constr. Div. of the Army; organization and its expansion, and in personal charge of major projects, such as the seven terminal ports on the Atlantic and Gulf Seaboards and the fourteen interior warehouses at industrial centers, these twenty-one major projects, alone, involving a combined expenditure of $234 000 000; commissioned Colonel, Q. M. C., U. S. A., August 24, 1918: Member, Am. Soc. C. E. (Vice-Pres., 1924-25; Treas., 1915-1916; and Director, 1912-14), Am. Ry. Eng. Assoc., Western Soc. of Engrs., and Engrs. Club of New York.

George Warren Fuller

(Official Nominee for Vice-President, Zone I)

Born December 21, 1868, Franklin, Mass. (Mass. Inst. Tech., S. B., 1890)—studied Univ. of Berlin and in private office, Piefke, Engr. of Water Filters, Berlin, Germany: spent 9 years in research work on methods of purifying water and sewage: 1891-1895 Lawrence Experiment Station, Mass. State Board of Health; 1895-1899 in charge of water purification investigations, Louisville,

Ky., and Cincinnati, Ohio: 1899 to date in private practice in New York, N. Y.; 1901-1911 in partnership with the late Rudolph Hering, M. Am. Soc. C. E., and since 1916 with James R. McClintock, M. Am. Soc. C. E.: has served on many water supply projects, including Montreal, Que., Canada, New York, Philadelphia, Pa., Baltimore, Md., Richmond, Va., New Orleans, La., Memphis, Tenn., Columbus, Ohio, Buffalo, N. Y., Grand Rapids, Mich., and Kansas City, Mo.; and has also served on numerous sewage disposal projects, including New Haven, Conn., Metropolitan District of New York, Reading, Pa., Atlanta, Ga., New Orleans, Columbus, Toledo, Ohio, Los Angeles, Calif., and Sanitary District of Chicago, Ill. (Chairman, Eng. Board of Review, 1924-1925); served the International Waterways Comm. and the International Joint Comm. on matters of control of lake and stream pollution; has served on the valuation of several scores of water-works plants for purposes of purchase and sale or rate regulation; and was a member of the Board of Valuation of Street Railway Properties of the Pittsburgh Rys. Co., Philadelphia Rapid Transit Co., and International Rys. Co.; was Chairman of Council on Standardization, Am. Water Works Assoc. (1920-1927); and Chairman, Council on Standards, Am. Public Health Assoc. (1926 to date); Past-Director, Am. Soc. C. E. (1914-1916).

Louis Clarence Hill

(Official Nominee for Vice-President, Zone IV)

Born February 22, 1865, Ann Arbor, Mich. (Univ. of Michigan, B. S. C. E., 1886; B. S. E. E., 1890; M. E., 1911 (Honorary))—1887-1888 Div. Engr., Duluth, Red Wing & Southern R. R.: summer 1887 U. S. Asst. Engr.: 1890-1903 Prof. of Hydr. and Elec. Eng., Colorado School of Mines; Member, Committee of Awards, Columbia Exposition; 1903-1905 Engr., U. S. Reclamation Service: 1905-1914 Superv. Engr., U. S. Reclamation Service, in charge of Southern Div., which included Arizona, New Mexico, Texas, Southern California, Southern Nevada, Utah, and parts of Colorado and Wyoming; in charge of construction of Roosevelt Dam and Granite Reef Dam and the irrigation system of the Salt River Project, Arizona; of Elephant Butte Dam and the irrigation system on the Rio Grande Project, New Mexico-Texas; of Laguna Dam and other works on the Yuma Project, Arizona-California; of Strawberry Dam and Tunnel on the Strawberry Project; and of power plants and miscellaneous structures built in connection therewith: 1914 to date member of firm of Quinton, Code and Hill, Cons. Engrs., Los Angeles, Calif.; construction of Camp Kearney during World War; Am. Member, Comm. to Divide the Water of the Colorado and Rio Grande between Mexico and the United States; Member, Boards of Engrs. on Columbia Basin Project; on Boulder Dam and other Colorado River developments; on American Falls Dam; and on the Carlsbad Project for the U. S. Govt.; Cons. Engr. to Cities of Los Angeles, San Diego, and Santa Barbara, among others, and to numerous irrigation districts and power companies in Canada, United States, and Mexico: Member, Sub-Committee on Arch Dam Investigation; Past-Pres., Los Angeles Section, Am.

Soc. C. E.; Member, Chamber of Commerce, Los Angeles and Hollywood, California Club, Hollywood Country Club, and Cosmos Club, Washington, D. C.

Richard Erwin Dougherty

(Official Nominee for Director, District No. 1)

Born February 13, 1880, New York, N. Y. (Columbia University, C. E., 1901)—1901-1902 Instr., Dept. of Civ. Eng., Columbia Univ.: 1902-1904 Rodman, Transitman, Insp., Asst. Engr., Middle Dist., New York Central & Hudson River R. R., Albany, N. Y.: 1904-1905 Asst. Engr., General Office, New York: 1905-1918 Res. Engr., Asst. Dist. Engr., and Dist. Engr., Eastern Dist., New York: 1916-1920 Special Lecturer on concrete construction and design, Cooper Union: 1918-1924 Designing Engr., N. Y. C. R. R., Buffalo and East: 1924-1926 Eng. Asst. to Vice-Pres., N. Y. C. R. R.: 1926 to date Engr. Asst. to President, N. Y. C. Lines: Director, Cleveland Union Terminals Co., Pittsburgh, Chartiers & Youghiogheny R. R. Co., Fulton Chain Ry. Co., Raquette Lake Ry. Co.: Member, Am. Soc. C. E., Am. Ry. Eng. Assoc., and New York Railroad Club.

Malcolm Pirnie

(Official Nominee for Director, District No. 1)

Born February 6, 1889, New York, N. Y. (Preliminary education, Common and High Schools, Springfield, Mass.; Harvard Col., S. B., 1910; Harvard Graduate School of Applied Science, M. C. E., 1911)—1911-1916 Asst. Engr. with Hazen and Whipple (later, Hazen, Whipple and Fuller), conducting investigations, surveys, and design work for water supply projects: 1916 to date, member of firm of Hazen, Whipple and Fuller (now Hazen and Whipple), in charge of water supply investigations, design, and construction work, also valuations in connection with rates: (War service, 1917-1918 Asst. San. Engr. with Am. Red Cross Mission to Russia; 1918-1919 Asst. Engr., Water Supply, E. of C., D. G. T., A. E. F., Capt. T. C., planning water service, railroad lines of communication): Member, Am. Soc. C. E.; Vice-Pres., New York Section; Member, Am. Soc. of Military Engrs., Am. Water Works Assoc., New England Water Works Assoc., Florida Eng. Soc.

Harrison Prescott Eddy

(Official Nominee for Director, District No. 2)

Born April 29, 1870, Millbury, Mass. (Worcester Polytechnic Institute, B. S., 1891)—1891-1892 Supt. of sewage treatment plant, Worcester, Mass.: 1892-1907 Supt. of Worcester Sewer Dept., in charge of construction, maintenance, and operation of sewers and sewage treatment plant, all work performed by direct labor: 1907 to date, partner, Metcalf & Eddy, Engineers,

Boston, Mass., specializing in sanitary engineering; Cons. Engr. to about seventy-five municipalities, upon water supply, sewerage and drainage works, water filtration, sewage purification, and refuse disposal, and to cities and manufacturers on the treatment and disposal of industrial wastes: co-author with the late Leonard Metcalf, M. Am. Soc. C. E., of "American Sewerage Practice" (3 vol.) and "Sewerage and Sewage Disposal" (textbook), and a number of technical papers: Member of commissions of engineers on sewage disposal and water supply for Milwaukee, Wis.; comparative costs of contract and day labor, sewer construction, in New Orleans, La.; sewage treatment for north side portion of the Sanitary District of Chicago, Ill.; sewage disposal for Detroit, Mich., Buffalo, N. Y., and Pittsburgh, Pa.; additional water supply for Rochester, N. Y.; Member of the Eng. Board of Review, San. Dist. of Chicago: Member, Am. Inst. of Cons. Engrs. (Vice-Pres., 1926); Boston Soc. of Civ. Engrs. (Pres., 1914); Am. Water Works Assoc.; Am. Pub. Health Assoc.; Am. Soc. for Testing Materials; Am. Chemical Soc.; Union, University, and Engrs. Clubs, of Boston.

Morris Knowles

(Official Nominee for Director, District No. 6)

Born October 13, 1869, Lawrence, Mass. (Common and High Schools, Lawrence; Mass. Inst. of Technology, S. B., 1891)—1893-1897 Massachusetts State Board of Health and Metropolitan Water Comm., Boston: 1897-1910 investigations, design, and construction of filtration system and new water supply, Pittsburgh, Pa.: 1903 to date cons. eng. practice; 1909-1911 designed waterworks system, Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.; 1911-1912 investigations of social, welfare, living, and sanitary conditions of mines and villages for Alabama Coal Operators' Assoc.; consultant to numerous cities and industries on municipal problems and community planning; 1895-1900 Engr. Member, Lawrence, Mass., Water Board; 1909-1915 Member, Pittsburgh Civic Comm.; 1908 to date Member, Pittsburgh Flood Comm., and Eng. and Executive Committee; 1914 Member, Board of Advisory Engrs., Miami Conservancy Dist.; 1911-1920 Director, Dept. of San. Eng., Univ. of Pittsburgh; 1916-1921 Chf. Engr., Essex Border Utilities Comm., Ontario, Canada; 1917 Superv. Engr., Camps Meade and McClellan; 1918-1919 Chf. Engr., Housing Div., U. S. Shipping Board; 1925 Member, Eng. Board of Review, Chicago San. Dist.; Director, Am. Inst. of City Planning; Member, Planning and Zoning Committee, U. S. Dept. of Commerce; 1920-1926 Member, Civic Development Committee, Chamber of Commerce of United States; Chairman, City Planning Comm., and Chairman, Board of Zoning Appeals, Pittsburgh; Member, Pennsylvania State Chamber of Commerce; Director, Pittsburgh Chamber of Commerce; Director, Am. Inst. of Cons. Engrs.; Member, Am. Soc. C. E., Am. Soc. Mech. Engrs., Eng. Inst. of Canada, National Inst. of Social Sciences, International Housing and Town Planning Assoc., Am., New England and Pennsylvania Water Works Associations, Am. Public Health Assoc., National Municipal League, Am. Academy of Political and Social Science, Bos-

ton Soc. of Civ. Engrs., Duquesne Club, University Club (Pittsburgh), University Club (Philadelphia), Cosmos Club (Washington, D. C.), and City Club (New York and Boston).

James Houston Johnston

(Official Nominee for Director, District No. 10)

Born November 5, 1866, Savannah, Ga. (Univ. of the South (2 years))—Nov. 1884-Mar. 1887 Rodman, Chainman, and Div. Engr. on surveys, location, and construction of several railroad lines: Mar. 1887-Oct. 1905 in service of Louisville & Nashville R. R. on location, construction, and maintenance of several divisions in Alabama, Mississippi, Louisiana, Tennessee, and Kentucky, except Apr. 1902-Nov. 1903 Secretary and Treasurer, Donelson Constr. Co. of Birmingham, Ala., in railroad and municipal work: Oct. 1905-July 1906 Gen. Supt., C. D. Smith & Co., Gen. Contrs., Memphis, Tenn., in charge of construction work in Arkansas, Tennessee, Mississippi, Alabama, Georgia, and Illinois: July 1906-July 1908 in service of Illinois Central R. R., first as Asst. Engr. in charge of Birmingham Terminals and then Div. Engr. in charge of track-laying and bridges on Birmingham Line: July 1908-Mar. 1910 Supt., Graves-Matthews Paving Co., Birmingham, Ala., engaged in manufacture of paving brick and construction of brick paved streets and highways in various cities in the South: Mar. 1910-Mar. 1912 Supt., Fairfield Land Co., Birmingham, in charge of design and construction of the model industrial town of Fairfield, Ala., for subsidiary companies of U. S. Steel Corporation: Jan. 1911-Feb. 1914 Chf. Engr., Kaul Lumber Co., Birmingham, constructing railroad and mill village near Tuscaloosa, Ala.: Feb. 1914-Feb. 1915 Field Engr., Atlanta, Birmingham & Atlantic R. R. on physical valuation: Feb. 1915 to date Valuation Engr. and Cons. Engr., Savannah & Atlantic R. R.; built 35-mile extension; concurrently, Sept. 1915 appointed by Governor of Georgia as Special Engr. on physical valuation of Western & Atlantic R. R. of Georgia; Special Engr., W. & A. Comm. of 1915-20 and W. & A. Comm. of 1925, and Cons. Engr., Georgia Public Service Comm.: Mar. 1917-Apr. 1918 Chf. Engr., Chestatee R. R. of Georgia, locating and building 10 miles of railroad for Chestatee Pyrites & Chemical Corporation in Georgia: Apr. 1918-Sept. 1919 Contract Engr. of several counties in Georgia, locating and constructing highways: July 1918-Jan. 1919 with Morris Knowles in Housing Div., U. S. Shipping Board, Emergency Fleet Corporation, as Project Engr. on construction of model townsites for shipbuilders in Southeast: Jan.-Feb. 1919 with Morris Knowles, Inc., Pittsburgh, Pa., on valuation of Pittsburgh railways: Sept. 1919-Sept. 1921 Asst. State Highway Engr. of Georgia in charge of office work and Secy.-Treas., State Highway Board of Georgia: Sept. 1921 to date, general consulting work: Jan. 1927 appointed by Mayor of Atlanta as Member of City Planning Comm. for term of three years: author (not yet printed) of "History of the Western & Atlantic R. R. of the State of Georgia", by order of the General Assembly of Georgia: Member, Atlanta Chamber of Commerce; Past-Pres., also, in 1926, Secy.-Treas., Georgia Section.

Frederick Hall Fowler

(Official Nominee for Director, District No. 13)

Born March 30, 1879, Fort Custer, Mont. (East Denver High School, 1899; Leland Stanford, Jr., Univ., A. B., 1905)—1905-1906 Asst. Engr. in charge of estimates, and in charge of construction, California Section, Laguna Dam, Colorado River: 1906-1907 in charge of stream gauging and reservoir and canal surveys for American River water supply proposed for City of San Francisco, Calif.: 1907-1908 Instr. in Civ. Eng., Stanford Univ.: 1908-1909 traveling in Europe and Egypt: 1909-1910 in charge of topographic surveys in Michigan and sewer construction in California: 1910-1922 Hydro-Elec. Engr. and Dist. Engr., U. S. Forest Service, San Francisco; water power studies and reports in California, Nevada, Arizona, New Mexico, Utah, and Idaho; and after passage of Federal Water Power Act, Eng. Representative of Federal Power Comm. in California and Nevada; also, in charge of topographic surveys, certain road work, and co-operative stream-flow studies: (1917-1919 Adviser to U. S. Fuel Administration and 1918 Captain of Engrs., Chf. of Engr.'s Office, Washington, D. C., and 211th Engineers, 11th Regular Army Div., Camp Meade, Md.): 1922 to date, Cons. Engr., San Francisco, on power and irrigation projects, valuations, and flood studies; Member of Cons. Board (with C. D. Marx, Past-President, Am. Soc. C. E., and Charles H. Paul, M. Am. Soc. C. E.) on San Gabriel River Flood Control; author of "Hydro-Electric Power Systems of California",* and in the publications of the Society of "Water Power Potentialities of the Pacific Coast",† "A Graphic Method for Determining the Stresses in Circular Arches Under Normal Loads by the Cain Formulas",‡ and discussion of Colorado and Sacramento River problems:§ Member, Special Committee on Effect of Earthquakes, and Chairman, San Francisco Advisory Committee, Eng. Societies Employment Service; Member, Commonwealth Club of California and Chairman of its Section on Water Power; Past-Pres., Stanford Alumni Assoc.; Member, Seismological Soc. of America, Am. Soc. of Military Engrs., Am. Ornithologists' Union, and University and Engrs.' Clubs of San Francisco.

* *Water Supply Paper No. 493*, U. S. Geological Survey.
† *Transactions*, Am. Soc. C. E., Vol. LXXXVI (1923), p. 836.
‡ *Proceedings*, Am. Soc. C. E., October, 1927, Papers and Discussions, p. 1893.
§ *Transactions*, Am. Soc. C. E., Vol 88 (1925), p. 373.

Local Sections*

Colorado.—October 5, 1927. A special meeting of the Section was held after a dinner. Director H. W. Dennis spoke on various Society matters, including redistricting. He also showed an interesting moving picture of present and past members of the Board of Direction. Director W. T. Chevalier then spoke on the economic aspects of engineering problems and Mr. C. A. Betts showed a new moving picture film of construction activities at the Moffat Tunnel. Attendance 42.

Detroit.—October 14, 1927. A Joint Meeting with the Detroit Engineering Society was held, at which "The Bearing Power of Soils" was the subject under discussion. Mr. W. S. Housel read a paper illustrated by lantern slides relative to this subject. Professor R. L. Morrison presented an article on laboratory tests and soil studies in connection with highway research. Discussion of the subject followed. The following officers were elected: President, F. H. Stephenson; First Vice-President, John W. Reid; Second Vice-President, Edward D. Rich; and Secretary-Treasurer, H. A. Shuptrine. Attendance 75.

Duluth.—October 17, 1927. After a luncheon, Mr. A. B. Clarfield spoke on the possibility of avoiding war, a theme relative to a recent book by Dr. Shastid, of Duluth. In his address, Mr. Clarfield made a plea for the passage of an amendment to the Constitution of the United States in which a vote of the people would be required, before the United States could engage in a war outside its territorial limits. Attendance 15.

St. Louis.—October 24, 1927. After business had been transacted, Mr. E. E. Christopher, Building Commissioner of the City of St. Louis, spoke on the recent St. Louis tornado. A discussion followed by Messrs. A. P. Greensfelder, William C. E. Becker, and others. Attendance 35.

San Francisco.—August 16, 1927. A dinner was held at which 106 members and guests were present. At the business meeting, Mr. Leslie W. Stocker rendered an interesting report on the Bowman Lake Excursion. Vice-President Walter L. Huber who represented the Section at the Local Sections Conference held in conjunction with the Annual Convention at Denver, Colo., gave an interesting account of the meeting. A short discussion of the entertainment features at the Convention was given by Director Henry D. Dewell. The technical meeting which followed consisted of a talk by Mr. E. T. Fisher on the uses of terra cotta in building construction, and the main subject of the evening, which was a Symposium on "The Design of Modern Office Buildings", by George W. Kelham, Architect; R. A. Hudson, of the firm of Hunter and Hudson, Engineers; and H. J. Brunnier, Consulting Engineer. Attendance 125.

* For list of Local Section Officers, Rules, etc., see 1927 Year Book, p. 104.

Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 126 and 127 of the Year Book for 1927.

Book Notices*

(October 1 to October 31, 1927)

Engineering Problems Manual. By Forest C. Dana and Elmer H. Willmarth. N. Y., McGraw-Hill Book Co., 1927. 187 pp., diagrams, tab., 8 x 5 in., fabrikoid. $2.00.

This work details a special course to beginning students at Iowa State College, based on practical engineering situations calling for a co-ordination of mathematics and physics in an engineering atmosphere. It contains specifications for well-organized computation sheets, notes on basic engineering principles and their use, methods of computation, problems, and a collection of tables.

History and Development of Road Transport. By James Paterson. (Pitman's Transport Library.) Lond. & N. Y., Isaac Pitman & Sons, 1927. 118 pp., illus., 9 x 6 in., cloth. $1.75.

How roads develop, especially those in England, the evolution of the wheeled vehicle, the locomotive and the motor car, and road transport during the last century are briefly described in this book.

Historic Railroads. By Rupert Sargent Holland. Phila., Macrae Smith Co., 1927. 343 pp., illus., 9 x 7 in., cloth. $4.00.

This popular account of the origin of the locomotive and of the development of railroads in various lands includes some of the more important instances in each continent.

International Critical Tables of Numerical Data, Physics, Chemistry, and Technology, Vol. 2. By National Research Council. N. Y., McGraw-Hill Book Co., 1927. 616 pp., diagrams, tab., 11 x 9 in., cloth. (Sold only on subscription for set of 5 vol., $60, payable at rate of $12 per vol., as issued.)

This volume contains the most accurate data available on the properties of woods, building stones, ceramic materials, fuels, lubricants, oils and waxes, rubber, leather, insulating materials, metals, etc.

Mehrstielige Rahmen. By A. Kleinlogel. Second Edition. Berlin, Wilhelm Ernst & Sohn, 1927. 448 pp., 9 x 7 in., paper, 28, -r.m.

These numerous formulas for the solution of statically indeterminate structures, cover all the systems that ordinarily are met with in practice, and in each case a complete solution is provided.

Methods and Plant for Excavation and Embankment. By Charles H. Paul and Charles S. Bennett. N. Y., McGraw-Hill Book Co., 1927. 328 pp., illus., tab., 9 x 6 in., cloth. $4.00.

This volume brings together data regarding the more common types of excavators and the usual methods of handling excavation and embankment, including performance records and costs.

* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

Modern Water Works Practice. By F. Johnstone Taylor. Lond., Ernest Benn, 1927. 272 pp., illus., tab., 8 x 5 in., cloth. 18s.

In this treatise covering the essential features of water-works of moderate size, modern methods of construction, of pumping, and of purification, are discussed.

Municipal and Rural Sanitation. By Victor M. Ehlers and Ernest W. Steel. N. Y., McGraw-Hill Book Co., 1927. 448 pp., illus., diagrams, tab., 9 x 6 in., cloth. $4.00.

In addition to discussing the usual questions of municipal and residential sewerage, sewage disposal, and water supplies, the authors take up the sanitation of swimming pools, tourist camps, and of milk and of other foods, the collection and disposal of refuse, the control of rats and insect pests, plumbing inspection, and housing.

Reinforced Concrete Construction; Vol. 2: Retaining Walls and Buildings. By George A. Hool. Second Edition. (Eng. Education Series.) N. Y., McGraw-Hill Book Co., 1927. 690 pp., illus., diagrams, tab., 9 x 6 in., cloth. $6.00.

This new edition conforms in general to the recommendations in the report for 1924 of the Joint Committee on Standard Specifications for Concrete and Reinforced Concrete.

Tropical Cyclones. By Isaac Monroe Cline. N. Y., Macmillan Co., 1926. 301 pp., diagrams, maps, tab., 9 x 6 in., cloth. $5.00.

As a result of thirty-seven years of work on the Mexican Gulf Coast as Meteorologist in the Weather Bureau, studying tropical cyclones, Dr. Cline has devised new methods for the study of the wind directions and velocities, the precipitation, and the other phenomena which occur around the cyclonic center.

Wehr- und Stauanlagen. By Paul Böss. Ber. u. Lpz., Walter de Gruyter & Co., 1927. 132 pp., illus., diagrams, 6 x 4 in., cloth. 1,50 r.m.

Here the student is given a brief survey of the various possibilities for storing water and of the principal points to be considered in planning and building storage works.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.	*American Concrete Institute, Proceedings* (Y.)	Detroit
A. I. E. E.	*American Institute of Electrical Engineers Journal* (M.)	New York
A. R. E. A.	*American Railway Engineering Association, Proceedings* (Y.)	Chicago
A. S. T. M.	*American Society for Testing Materials, Proceedings* (Y.)	Philadelphia
Am. Soc. C. E.	*American Society of Civil Engineers, Proceedings* (M.)	New York
Am. Soc. Mun. Impvts.	*American Society for Municipal Improvements, Proceedings* (Y.)	New York
Am. W. W. Assoc.	*American Water Works Association, Journal* (M.)	Baltimore
Am. Wood Prs. Assoc.	*American Wood Preservers Association, Proceedings* (Y.)	Chicago
Ann. P. et C.	*Annales des Ponts et Chaussees* (Bi-M.)	Paris
Ann. T. P. Belg.	*Annales des Travaux Publics de Belgique* (Bi-M.)	Brussels
Assoc. Ing. Gand.	*Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand* (Q.)	Ghent
Bost. Soc. C. E.	*Boston Society of Civil Engineers, Journal* (M.)	Boston
Can. Engr.	*Canadian Engineer* (W.)	Toronto
Comwlth Engr.	*Commonwealth Engineer* (M.)	Melbourne
Cornell C. E.	*Cornell Civil Engineer* (M.)	Ithaca
Dock & Harbour	*Dock and Harbour Authority* (M.)	London
Eng.	*Engineering* (W.)	London
Eng. & Contr	*Engineering and Contracting* (M.)	Chicago
Eng. Inst. Can.	*Engineering Institute of Canada, Journal* (M.)	Montreal
Eng. N. R.	*Engineering News-Record* (W.)	New York
Engrs. Soc. W. Pa.	*Engineers' Society of Western Pennsylvania, Journal* (M.)	Pittsburgh
Engr.	*Engineer* (W.)	London
Engrs. & Eng.	*Engineers and Engineering, Engineers' Club of Philadelphia* (M.)	Philadelphia
Gas und Wasser	*Gas und Wasserfach* (W.)	München
Gen. Civ.	*Le Génie Civil* (W.)	Paris
Gesund. Ing.	*Gesundheits Ingenieur* (W.)	Munich
Inst. C. E.	*Institution of Civil Engineers Minutes of Proceedings* (Q.)	London
Inst. Mun. & Co. Engrs.	*Institution of Municipal and County Engineers, Journal* (W.)	London
Int. Ry. Cong. Assoc.	*International Railway Congress Association, Bulletin* (M.)	Brussels
Land. Arch.	*Landscape Architecture* (M.)	Boston
Mech. Eng.	*Mechanical Engineering* (M.) *Journal of the American Society of Mechanical Engineers*	New York
Mil. Engr.	*Military Engineer* (Bi-M.)	Washington
Min. & Metal.	*Mining and Metallurgy* (M.), *American Institute of Mining Engineers*	New York
Mun. & Co. Eng.	*Municipal and County Engineering* (M.)	Indianapolis
N. E. W. W. Assoc.	*New England Water Works Association, Journal* (Q.)	Boston
N. Y. R. R. Club.	*New York Railroad Club, Proceedings* (M.)	Brooklyn
Oest. Ing. Arch. Ver.	*Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift* (F.)	Vienna
Power	*Power* (W.)	New York
Rev. Gen.	*Revue Générale des Chemins de Fer* (M.)	Paris
Ry. Age	*Railway Age* (W.)	New York
Ry. Eng. & Main.	*Railway Engineering and Maintenance* (M.)	Chicago
Schw. Bauz.	*Schweizerische Bauzeitung* (W.)	Zurich
Sci. Am.	*Scientific American* (M.)	New York
Soc. Ing. Civ. Fr.	*Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus* (Q.)	Paris
Tech. Gemein.	*Technisches Gemeindeblatt* (F.)	Berlin
Ver. deu. Ing.	*Verein deutscher Ingenieure, Zeitschrift* (W.)	Berlin
West. Constr. N.	*Western Construction News* (F.)	San Francisco
West. Ry. Club.	*Western Railway Club, Proceedings* (M.)	Chicago
West. Soc. Engrs.	*Western Society of Engineers, Journal* (M.)	Chicago
Zeit. Bau.	*Zeitschrift fur Bauwesen* (Q.)	Berlin
Z. d. Bauver.	*Zentralblatt der Bauverwaltung* (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

A. Applied Sciences

a. Processes of Calculation

3. Stresses and Strains

Strength of Materials and Some Confusing Teaching.* D. J. Fee. Eng. N. R. Sept. 29, '27.
Plastic Flow and the Strength of Cold-Worked Steel.* Earl B. Norris. Eng. N. R. Oct. 6, '27

B. Applied Mechanics

a. Mechanics of Solids

2. Elastic Solids

The Calculation of Temperature Stresses in Tubes.* L. H. Barker. Eng. Oct. 7, '27.

3. Jointed Systems

Beitrag zur Berechnung von Schrumpfverbindungen.* (Contribution to the Calculation of Shrunk Connections.) W. Janicki. Schw. Bauz. Sept. 3, '27.

4. Riveted Systems

Riveted Steel. A. F. Jensen. Engrs. & Eng. Sept., '27.
Steel Penstock Design by a Graphical Method.* Peter Bier. Eng. N. R. Oct. 20, '27.

b. Hydraulics

2. Physical Hydraulics

Ueber ein neues Profil für Saugrohre von Turbinen und Pumpen.* (On a New Profile for Draft Tubes of Turbines and Pumps.) Karl Grimm. Schw. Bauz. Sept. 17, '27.
Rohrleitungs-Rechenschieber.* (Pipe Line Slide Rule.) H. Behrens. Gesung. Ing. Sept. 3, '27.
Rauhigkeits-Koeffizienten von ausgeführten Kanälen, im besondern von verkleideten und unverkleideten Stollen.* (Coefficient of Roughness of Artificial Channels, Especially Lined and Unlined Tunnels.) J. Büchi. Schw. Bauz. Sept. 24, '27.

3. Industrial Hydraulics

The Lanarkshire Hydro-Electric Power Scheme.* Engr. Serial beginning Sept. 30, '27.
Geological Problems of the Spray Water Power Project in Alberta.* John A. Allan. Eng. Inst. Can. Oct., '27.
The Bryson Hydro-Electric Power Development.* H. E. Pawson. Eng. Inst. Can. Oct., '27.
Water-Power Appraisals.* William H. Cushman. Am. Soc. C. E. Oct., '27.
New Theory for the Centrifugal Pump.* A. F. Sherzer. Am. Soc. C. E. Oct., '27.
The Hydraulic Design of Flume and Siphon Transitions.* Julian Hinds. Am. Soc. C. E. Oct., '27.
High Density of Snow Accelerates Its Melting and Runoff. J. E. Church, Jr. Eng. N. R. Oct. 6, '27.
L'Usine Hydro-Electrique de Lilla Edet (Suède).* (The Lilla Edet Hydro-Electric Plant, Sweden.) Gen. Civ. Sept. 3, '27.

4. Dams

Further Data on Failure of the Gros Ventre "Dam".* Eng. N. R. Oct. 13, '27.

c. Pneumatics

2. Physical Pneumatics

Building Destruction in the St. Louis Tornado.* W. J. Knight. Eng. N. R. Oct. 6, '27.

C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumin, Timber, etc.

The Determination of Free-Water Content of Field Aggregates. R. P. V. Marquardsen. Eng. & Contr. Sept., '27.
Water Control in, and Design of Mixtures for, the Production of Water-Cement-Ratio Concrete.* R. P. V. Marquardsen. Eng. & Contr. Sept., '27.
Winter Heating of Concrete Materials and Mix.* C. S. Hill. Eng. N. R. Sept. 29, '27.
Handling and Placing Concrete in Winter.* C. S. Hill. Eng. N. R. Oct. 6, '27.
Portlandzement und Naturzement.* (Portland Cement and Natural Cement.) Haegermann. Z. d. Bauver. Aug. 31, '27.

c. Preservation and Use of Materials, Painting, Waterproofing

Observations on Creosoted Fir. Can. Engr. Sept. 20, '27.
Creosote Treatment of Douglas Fir.* R. H. Rawson. West. Constr. N. Sept. 25, '27.
Kurzprüfung von Anstrichstoffen.* (Rapid Testing of Paints.) M. Schulz. Ver. deu. Ing. Sept. 10, '27.

e. Earthwork, Cubage, Excavating Machinery

Wellpoint Method for Handling Excavation of Foundation Pit at New Sewage Pumping Station, Lynn, Massachusetts.* Charles Terzaghi. Bost. Soc. C. E. Sept., '27.
Ueber Bewegungen des anstehenden Bodens bei Erd- und Felsarbeiten.* (On Movements of the Neighboring Ground on Earth and Rock Work.) Vincenz Pollack. Z. d. Bauver. Sept. 14, '27.

f. Rock Excavation, Mining, Rock Removal

Abstracts of Institute Papers. Min. & Metal. Oct., '27.
Anwendung von Lademaschinen im Bergbau unter Tage.* (Use of Loading Machines in Mining under Ground.) Fr. Prockat. Ver. deu. Ing. Sept. 17, '27.

g. Execution of Works, Specifications

Building a Great Lake and Water Resort.* Frank W. Skinner. Eng. & Contr. Sept., '27.
Design of Sand and Gravel Plants. Frank M. Welch. (Paper read before Nat'l Sand & Gravel Assoc.) Eng. & Contr. Sept., '27.
Some Observations on Specifications and Contract Documents. G. S. Burt. Inst. Mun. & Co. Eng. Sept. 20, '27.

1. Of Masonry

Montebello Municipal Natatorium.* Ormond A. Stone West. Constr. N. Oct. 10, '27.

2. Of Concrete

Testing Concrete Poles Under Load.* F. G. Welsch. (From *Concrete Highways and Municipal Improvements.*) Can. Engr. Oct. 11, '27.
Protecting Winter Placed Concrete in Heavy Sections.* C. S. Hill. Eng. N. R. Oct. 13, '27.

4. Of Metal

Structural Details of a Steel-Framed Hemispherical Dome.* Henry F. Blood. Eng. N. R. Oct. 6, '27.
The Standardization of Steel Tanks. Mark W. Daw. West. Constr. N. Oct. 10, '27.

h. Foundations, Bridge Piers and Abutments

Large Power House Foundation Built in Wet Ground. Eng. N. R. Sept. 29, '27.
Open Pier Foundations of St. Louis Telephone Building.* W. J. Knight. Eng. N. R. Oct. 6, '27.
Caissons en Béton Armé, avec Fond, pour Divers Travaux Maritimes, Exécutes en Espagne.* (Reinforced Concrete Caissons, with Bottoms, for Various Maritime Works Executed in Spain.) J. Eugenio Ribera. Gen. Civ. Sept. 24, '27.

j. Piles and Pile-Driving

The Life of Reinforced Concrete Piling in Seawater.* A. L. Sonderegger. West. Constr. N. Sept. 25, '27.

k. Tunnels and Tunneling-Shield

Speeding Up the Moffat Tunnel.* Sci. Am. Oct., '27.
Ueber Unzulänglichkeiten und Rückständigkeiten im Praktischen Erd- und Stollenbau.* (On Inadequate and Antiquated Phases of Earthwork and Tunneling.) Vincenz Pollack. Oest. Ing. Arch. Ver. Serial beginning Sept. 2, '27.

D. Highways

a. Location

Allegheny County Develops Ultimate Highway System Plan.* Eng. N. R. Oct. 13, '27.

c. Construction

Design of Concrete Roads—Curing of Concrete.* Harold F. Clemmer. Bost. Soc. C. E. Sept., '27.
Concrete and Concrete Roads.* Geo. Stewart. Inst. Mun. & Co. Engr. Sept. 20, '27.
Bituminous Macadam Road Construction.* Hugh A. Lumsden. Can. Engr. Sept. 20, '27.
Coast Route Highway, Seawall Section, Ventura County.* C. F. Rogers. West. Constr. N Sept. 25, '27.
The Economics of Concrete Mixes for Road Work.* R. T. Giles. Eng. N. R. Sept. 29, '27.
Modern Crushed Stone and Gravel Surfacing. Discussion: Roy A. Klein, C. H. Purcell, and O. E. Stanley. Am. Soc. C. E. Oct., '27.
Private Street Works.* P. F. Moore. Inst. Mun. & Co. Eng. Oct. 4, '27.
Road Construction. (Papers read before Can. Good Roads Assoc.) Can. Engr. Oct. 4, '27.
Concrete and Concrete Roads. H. C. Mason. Inst. Mun. & Co. Engrs. Oct. 4, '27.
Colas Demonstration at Maple.* Can. Engr. Oct. 11, '27.
Road Construction Contract Control. Leslie R. Ames. (Paper read before Am. Road Bldrs. Assoc.) Can. Engr. Oct. 11, '27.
Mehr Klarheit in die Bewertung der Strassenbaustoffe. (More Clarity in the Evaluation of Road Building Materials.) Tech. Gemein. Sept. 5, '27.

e. Street Cleaning, Dust Prevention, Snow Removal

Snow-Removal Methods in New York, N. Y. Elmer C. Goodwin. Am. Soc. C. E. Oct., '27.
Snow Removal From Streets in Boston, Massachusetts. Edward F. Murphy. Am. Soc. C. E. Oct., '27.
Zweckmässige Strasseneinläufe und die Beseitigung der anfallenden Stoffe.* (Suitable Street Catch Basins and the Removal of Decaying Substances.) Möllering. Tech. Gemein. Sept. 5, '27.

h. Vehicles, Automobiles, Traffic

Traffic Control by Electric Signal Lights.* M. O. Eldridge. Am. Soc. C. E. Oct., '27.
Traffic Control in New York, N. Y. Philip D. Hoyt. Am. Soc. C. E. Oct., '27.
Automobile Hazard in Cities and Its Reduction. Discussion: Lee S. Trainor, Sidney J. Williams, and A. B. Barber. Am. Soc. C. E. Oct., '27.

x. Miscellaneous

Provincial Highway System of Quebec.* Can. Engr. Sept. 20, '27.

E. Bridges, Viaducts, and Arches

b. Iron and Steel Bridges and Viaducts

Strengthening a Bridge Over the River Don.* Engr. Sept. 23, '27.
Forty Bridge Spans Erected in Four Days.* Ry. Eng. & Main. Oct., '27.
Cantilever Erection of Long Spans of Missouri River Bridge.* L. J. Sverdrup. Eng. N. R. Oct. 13, '27.
La Destruction du Pont de Nossy-Vé, à Madagascar, par un Cyclone.* (The Destruction of the Nossy-Vé Bridge in Madagascar by a Cyclone.) M. Nicolas. Gen. Civ. Sept. 3, '27.

c. Stone Bridges and Viaducts

A Graphic Method for Determining the Stresses in Circular Arches Under Normal Loads by the Cain Formulas.* Frederick Hall Fowler. Am. Soc. C. E. Oct., '27.

d. Concrete and Reinforced Concrete Bridges and Viaducts

Les Caissons en Béton Armé du Nouveau Pont sur le Guadalquivir, à Séville (Espagne).* (The Reinforced Concrete Caissons for the New Bridge Over the Guadalquivir at Seville, Spain.) J. Eugenio Ribera. Gen. Civ. Sept. 10, '27.
Pont en Béton Armé de 92 Mètres de Portée sur L'Oued Mellegue (Tunisie).* (Reinforced Concrete Bridge with a Span of 92 Meters Over the Oued Mellegue, Tunis.) Ch. Dantin. Gen. Civ. Sept. 17, '27.

f. Suspension Bridges, Transfer Bridges

Windsor-Detroit International Bridge.* P. L. Pratley. Can. Engr. Sept. 27, '27.
The Eye-Bar Cable Suspension Bridge at Florianopolis, Brazil.* Discussion: Frederick C. Carstarphen and A. DeH. Hoadley. Am. Soc. C. E. Oct., '27.
Ohio River Suspension Bridge at Portsmouth.* D. B. Steinman. Eng. N. R. Oct. 20, '27.

g. Swing, Bascule, Lift, Floating, Oscillating Bridges; Traveling Cranes

Control and Signalling Equipment on Railway Swing Bridges.* C. H. S. Tupholme. Dock & Harbour Oct., '27.

F. Inland Waters

a. Natural Waterways (General Articles)

Advances in Waterways Engineering During a Half Century.* W. M. Black. Am. Soc. C. E. Oct., '27.
The Delaware River From Philadelphia to the Sea.* F. C. Boggs. Am. Soc. C. E. Oct., '27.

b. Canals (General Articles)

The Lake Washington Ship Canal, Washington. Discussion: Ernest B. Hussey and Charles E. Fowler. Am. Soc. C. E. Oct., '27.
Au Sujet du Discours Présidentiel de M. J. F. Stevens, à l' "American Society of Civil Engineers", sur le Canal de Panama. (On the Subject of the Presidential Address of J. F. Stevens to the "American Society of Civil Engineers" on the Panama Canal.) François Mange. Gen. Civ. Sept. 24, '27.

c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings

Side Spillways for Regulating Diversion Canals.* W. H. R. Nimmo. Am. Soc. C. E. Oct., '27.
Probability of Flood Flows.* Discussion: C. S. Jarvis. Am. Soc. C. E. Oct., '27.
Flood Protection Work Started at Beardstown, Ill.* Eng. N. R. Oct. 13, '27.

g. Consolidation of Banks, Leakage, etc.

The Great Yangtze Bar.* H. von Heidenstam. Am. Soc. C. E. Oct., '27.

k. Utilization of Inland Waterways, Freight, Capacity

Zur Entwicklung der Schiffahrt auf dem Oberrhein. (On the Evolution of Navigation on the Upper Rhine.) Schw. Bauz. Serial beginning Sept. 24, '27.

G. Maritime Works

a. Behaviour of Movements of the Ocean. Winds. Waves. Tides. Currents

Tides and Their Engineering Aspects. Discussion: Lewis M. Haupt, H. DeB. Parsons. R. L. Faris, and Earl I. Brown. Am. Soc. C. E. Oct., '27.

c. Vessels and Maritime Navigation, Lighthouses, Buoys, Various Signals

Akustische Lotverfahren Geräte und Erfahrungen.* (Acoustic Sounding Method, Apparatus and Experiences.) E. Lübcke. Ver. deu. Ing. Sept. 3, '27.
Die hydraulisch gesteuerte 1 500 P S Dreizylinder-Sulzer-Gleichstrom-Dampfmaschine des Salondampfers "Helvétie" auf dem Genfersee.* (The Hydraulically Controlled 1 500 H. P. Three-Cylinder Sulzer Direct Flow Steam Engine of the Palace-Steamer "Helvetie" on Lake of Geneva.) Schw. Bauz. Sept. 10, '27.

g. Dredges and Dredging. Force Pumps. Refloating and Removing Wrecks. Ice-Breakers

Erfahrungen mit dem Kabelbagger.* (Experiences with the Drag Line Excavator.) Behring. Ver. deu. Ing. Sept. 3, '27.

h. Wharves, Mooring Buoys, Harbor Equipment

Narrow Grain Pier Built to Form Unit of Future Pier.* H. W. Frith. Eng. N. R. Oct. 6, '27.

i. Harbors

The Port of Madras.* William Fyffe. Dock & Harbour Oct., '27.
The Work of the Port of Seattle, Washington. Discussion: D. W. McMorris, Joseph M. Clapp and Charles E. Fowler. Am. Soc. C. E. Oct., '27.

H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

a. Railroads

1. General Articles

Railway Gauges in Australia, South America and Africa.* (From *The Railway Gazette.*) Int. Ry. Cong. Assoc. Sept., '27.
New Railway in Louisiana Cuts Off Long Ferry Transfer.* Percy F. Lyons. Eng. N. R. Oct. 6, '27.

3. Roadbed (Grading Construction Work)

Moving Track in Making Fill.* Eng. & Contr. Sept., '27.
Railway Ballast. F. J. Stimson. (Paper read before Nat'l Sand & Gravel Assoc.) Eng. & Contr. Sept., '27.

4. Track

The Why and How of Guard Rails.* Ry. Eng. & Main. Oct., '27.
Second Track Work Involves Extensive Line Revision.* Ry. Age Oct. 1, '27.
The Economics of Heavy Track Construction.* George J. Ray. (From paper read before Roadmasters' and Maintenance of Way Assoc.) Ry. Age Oct. 8, '27.
La Fissuration Superficielle des Rails en Service. Technique d'Etude des Rails Fissures.* (The Superficial Cracking of Rails in Service. Technique of the Study of Rail Cracks.) A. Portevin. Rev. Gen. Sept., '27.

5. Signals and Safety Apparatus

Electrical Power for Railway Signaling and Communication.* M. G. Tweedie. (From *Proceedings* Ry. Signal Engrs.) Int. Ry. Cong. Assoc. Sept., 27.
Dispositif de Signalisation à Effacement différé Adopté par les Chemins de Fer de l'Est.* (Signal Arrangement with Delayed Clearance Adopted by the Chemin de Fer de l'Est.) Michon. Rev. Gen. Sept., '27.

6. Rolling Stock

Great Northern Electric Locomotives.* Robert Walsh. Ry. Age Sept. 24, '27.
Erie Acquires 2-8-4 Locomotives for Freight Service.* Ry. Age Oct. 8, '27.
High Pressure Steam Driven Car is Developed.* Ry. Age Oct. 15, '27.
Application de la Soudure Autogène à la Réparation des Chaudières-Locomotives dans les Ateliers des Chemins de Fer de l'Etat à Sotteville, Q. M.* (Application of Autogeneous Welding in the Repair of Locomotive Boilers in the Shops of the State Railway at Sotteville.) M. E. Renaud. Rev. Gen. Sept., '27.

7. Use of Electricity

Current Collection from an Overhead Contact System Applied to Railroad Operation.* S. M. Viele. A. I. E. E. Oct., '27.
"Battle of Systems" In European Electrification.* Kent T. Healy. Ry. Age Oct. 1, '27.

8. Stations, Terminals, Engine Houses, Shops

The Neglected Science of Railway Storekeeping.* R. A. Weston. Ry. Age Serial beginning Sept. 24, '27.
"Reclamation" Carried Far on Canadian National.* George T. Boone. (Int. Ry. Gen'l Foremen's Assoc.) Ry. Age Oct., '27.
The Management of Railway Shops and Terminals. William R. Harrison. Mech. Eng. Oct., '27.

9. Technical and Commercial Use

Buses Conquer the Syrian Desert.* A. P. Warner. Ry. Age (Pt. 2) Sept. 24, '27.
Railway Bus and Track Operation Tabulated.* Ry. Age (Pt. 2) Sept. 24, '27.
Is the Control of Brine Drippings an Impossible Task.* Ry. Eng. & Main, Oct., '27.

b. Special Railroads

2. Aerial Railroads (Funicular, Monorail)

Die Neuen Seilschwebebahnen zur Personenbeförderung.* (The New Cableways for Passenger Transportation.) Robert Hanker. Oest. Ing. Arch. Ver. Sept. 2, '27.
Le Funiculaire Aérien de l'Ile de Chypre pour le Transport de l'Amiante.* (Overhead Cableway on the Island of Cyprus for the Transportation of Asbestos.) Guido Brillo. Gen. Civ. Sept. 10, '27.

3. Narrow Gauge. Light Railways.

Mountain Revision on Main-Line Railway in India.* Eng. N. R. Sept. 29, '27.

c. Ferry Boats

State Highway Ferry Service at Straits of Mackinac.* M. DeGlopper. Eng. N. R. Oct. 6, '27.
Grand Trunk Western Builds Flexible Apron for Ferry Slip.* Ry. Age Oct. 15, '27.

d. Street Railways, Elevated Railways, Subways

4. Track

Street Railway Track with Steel Ties.* W. S. Tabor. (Paper read before *Elec. Ry. Jour.*) Eng. & Contr. Sept., '27.

f. Aeronautics

4. Aerodromes and Landing Fields

Illumination of Flying Fields. J. E. Whitbeck. (Paper read before Illuminating Soc., Baltimore Chapter.) Engrs. & Eng. Sept., '27.

I. Municipal Water-Works. Agricultural Engineering. Irrigation

a. General Articles

Water Supply for Army Railways in France. Discussion: Paul M. La Bach. Am. Soc. C. E. Oct., '27.

New Source of Water Supply for Newport.* Engr. Oct. 7, '27.

The San Jose Water Works.* Philip Schuyler. West. Constr. N. Oct. 10, '27.

Hetch Hetchy Water Supply Project for San Francisco.* M. M. O'Shaughnessy. West. Constr. N. Oct. 10, '27.

b. Hydrology, Water Resources

High Density of Snow Accelerates Its Melting and Runoff. J. E. Church. Eng N. R. Oct. 6, '27.

Niederschlag und Abfluss in den Schweizer Hochalpen, besonders im Mattmarkgebiet.* (Precipitation and Runoff in the Swiss Hochalpen, Especially in the Mattmark Region.) Karl Fischer. Z. d. Bauver. Sept. 7, '27.

c. Dams and Reservoirs

Some Examples of the Design of High Gravity Dams.* N. Barnes Hunt. West. Constr. N. Sept. 25, '27.

Notes on Arched Gravity Dams.* Discussion: George R. Rich and A. Floris. Am. Soc. C. E. Oct., '27.

Relining of the Volunteer Park Reservoir, Seattle.* J. H. Quense. West. Constr. N. Oct. 10, '27.

Die Sorpetalsperre.* (The Sorpe Dam.) Link. Z. d. Bauver. Aug. 31, '27.

d. Analysis and Purification of Water

The Engineer and Public Health. J. P. de Villiers. Inst. Mun. & Co. Engrs. Sept. 20, '27.

San Fernando Chlorination Plant, Los Angeles.* Carl Wilson. West. Constr. N. Oct. 10, '27.

Taste and Odor in Sacramento's Water Supply. Ralph A. Stevenson. West Constr. N. Oct. 10, '27.

The Upper San Leandro Filtration Plant of the East Bay Water Company, Oakland, California.* Wilfred F. Langelier. West. Constr. N. Oct. 10, '27.

New Water Filtration Plant at Wenatchee, Washington.* Fred J. Sharkey and S. DeMoss. West. Constr. N. Oct. 10, '27.

Carbon Dioxide Treatment at St. Louis Water-Works. A. W. Graf. Eng. N. R. Oct. 20, '27.

Eine neue Methode zur Bestimmung des biochemischen Sauerstoffbedarfs.* (A New Method for the Determination of Biochemical Oxygen Requirements.) F. Sierp. Tech. Gemein. Sept. 20, '27.

e. Distribution of Water

Wellpoint Method for Handling Excavation of Foundation Pit at New Sewage Pumping Station, Lynn, Massachusetts.* Charles Terzaghi. Bost. Soc. C. E. Sept., '27.

Some Phases of Irrigation Financing. Discussion: R. P. Teele and J. L. Burkholder. Am. Soc. C. E. Oct., '27.

f. Drainage of Land

Drainage in the Imperial Irrigation District, California.* Thos. N. Hildreth. West. Constr. N. Sept. 25, '27.

Drainage Extends Suburban Area of New Orleans.* Eng. N. R. Sept. 29, '27.

J. Sewerage. Sewage and Refuse Disposal

a. Sewers and Drains

Sheerness Main Sewerage.* F. W. S. Stanton. Inst. Mun. & Co. Engrs. Oct. 4, '27.

b. Sewage Disposal Purification

Treatment of Sewage Sludge. A. P. I. Cotterill. (Paper read before Royal San. Inst. Cong.) Can. Engr. Sept. 20, '27.

Experience in Destroying Sewage Screenings by Burning.* Robert A. Appleton. Eng. N. R. Sept. 29, '27.

Stream Pollution in the Pacific Northwest. Discussion: William J. Roberts. Am. Soc. C. E. Oct., '27.

Sink Hole Topography Study for Sewage Disposal.* J. E. Lamar. Eng. N. R. Oct. 20, '27.

Eine Neuzeitliche Abwasserbeseitigungsanlage auf Bahnhof Köln-Kalk Nord.* (A Modern Sewage Disposal Plant at the Cologne-Kalk Nord Station.) P. Thomas. Z. d. Bauver. Aug. 31, '27.

Ueber Klein-Kläranlagen.* (On Small Clarification Plants.) R. Kranz. Tech. Gemein. Sept. 5, '27.

c. Refuse Disposal

Die Müllverbrennung nach dem Kriege.* (Refuse Incineration after the War.) Otto Uhde. Ver. deu. Ing. Sept. 3, '27.

K. Heat Engines

b. Steam Turbines

10 000–14 000-kw. Ljungstrom Steam Turbine. Eng. Serial beginning Sept. 30, '27.

c. Electric Lighting

Neuere Anschauungen über Zünd- und Verbrennungs-vorgänge in Dieselmotoren.* (Recent Ideas on Ignition and Combustion Processes in Diesel Engines.) Fr. Sass. Ver. deu. Ing. Sept. 10, '27.

Zur Theorie des Gasübertragung bei Diesellokomotiven.* (On the Theory of Gas Transmission in Diesel Locomotives.) G. Lomonosoff. Ver. deu. Ing. Sept. 17, '27.

L. Electricity

b. Distribution and Transmission of Electricity

1. Storage Batteries and Cells

Les Usines de la Compagnie Parisienne de Distribution d'Electricité à Saint-Ouen et à Issy-les-Molineaux.* (The Plants of the Compagnie Parisienne for the Distribution of Electricity, at Saint-Ouen and at Issy-les-Molineaux.) Imbs. Gen. Civ. Serial beginning Sept. 24, '27.

2. Long-Distance Transmission of Energy

Underground Transmission at 66 000 Volts in Philadelphia.* Howard S. Phelps. Engrs. & Eng. Sept., '27.

High-Voltage Measurements on Cables and Insulators.* C. L. Kasson. A. I. E. E. Oct., '27.

Ground Relay Protection for Transmission Systems.* B. M. Jones and G. B. Dodds. A. I. E. E. Oct., '27.

A Carrier-Current Pilot System of Transmission Line Protection.* A. S. Fitzgerald. A. I. E. E. Oct., '27.

Aufgaben und Ziele der Hochspannungselektrotechnik.* (Problems and Aims of High Tension Electrical Engineering.) Erwin Marx. Ver. deu. Ing. Sept. 17, '27.

3. Distribution and Wiring of Electricity

Tranmission Tower Diagonal Bracing.* C. R. Young and others. Can. Engr. Oct. 11, '27.

Testing Concrete Poles Under Load.* F. G. Welsch. (From *Concrete Highways and Municipal Improvements.*) Can. Engr. Oct. 11, '27.

c. Electric Lighting

2. Uses

Illumination of Flying Fields. J. E. Whitbeck. (Paper read before Illuminating Soc., Baltimore Chapter.) Engrs. & Eng. Sept., '27.

d. Mechanical Uses of Electricity

2. Servomotors, Hoists, Elevators, Handling Machinery

L'Emploi de Plusieurs Vitesses dans les Ascenseurs et Monte-Charges.* (The Use of Several Speeds in Passenger and Freight Elevators.) E. Bouchinot. Gen. Civ. Sept. 3, '27.

3. Welding

Structural Welding of Gas Plant, Melbourne, Australia. Eng. N. R. Oct. 13, '27.

f. Signals and Communication

Advance Planning of the Telephone Toll Plant. J. N. Chamberlin. A. I. E. E. Oct., '27.

La Transmission des Images par la T. S. F. Le Systeme de Transmission Karolus.* (The Transmission of Pictures by Radio. The Karolus Transmission System.) R. Malo. Gen. Civ. Sept. 17, '27.

M. Architecture

a. Educational, Government and Scientific Buildings

New State Technological College at Lubbock, Tex.* Eng. N. R. Sept. 29, '27.

Die neue Gewächshausanlage im Botanischen Garten der Universität Bonn.* (The New Green-House Installation in the Botanical Gardens of Bonn University.) Gustav Lampmann. Z. d. Bauver. Aug. 31, '27.

c. Residences, Hotels

Ferienhäuser und "Wochenend"- Häuschen.* (Vacation Houses and "Week-End" Cabins.) Schw. Bauz. Sept. 10, '27.

Das Haus "Auf dem Hügel" bei Rüschlikon.* (The House "Auf dem Hügel" at Rüschlikon.) Schw. Bauz. Sept. 17, '27.

Bodenpolitik und Städtebau.* (Land Policy and City Building.) Hahn. Tech. Gemein. Bauz. Sept. 24, '27.

d. Storage Buildings

Pointers on Garage Design from a Manufacturer.* Ry. Age (Pt. 2) Sept. 24, '27.
Design of a 350-Ton Capacity Coal Bunker.* Benjamin F. Latting. Cornell C. E. Oct., '27.

e. Hospitals and Asylums

Baufragen im Krankenhauswesen. (Construction Problems in Hospitals.) Alter. Gesund. Ing. Aug. 27, '27.
Die Heilstätte Strengberg in Niederösterreich.* (The Strengberg Sanitorium in Lower Austria.) Max Setz. Oest. Ing. Arch. Ver. Sept. 16, '27.

f. Factories and Mill Buildings

Large One-Story Industrial Building, 2 400 x 500 Ft.* Nelson J. Bell. Eng. N. R. Sept. 29, '27.

O. Administration. Legislation. Economics. Statistics

b. Economic Questions of a General Character, Valuations, Etc.

Water-Power Appraisals.* William H. Cushman. Am. Soc. C. E. Oct., '27.

d. Administrative and Financial Management of Means of Communication

2. Routes and Roads
Allegheny County Develops Ultimate Highway System Plan.* Eng. N. R. Oct. 13, '27.
5. Railroads and Street Railways
The Relation of Highway Transportation to the Railway. Discussion: W. W. Crosby and William T. Lyle. Am. Soc. C. E. Oct., '27.

g. Engineering Education

The Civil Engineer: His Training and Career. Charles W. Comstock. Cornell C. E. Oct., '27.

Q. Surveying and Geodesy

Quantity Surveys and the Owner. Oscar Euphrat. (Paper read before Am. Inst. Quantity Surveyors.) Eng. & Contr. Sept., '27.
Boundary Surveys. C. T. Johnston. Am. Soc. C. E. Oct., '27.
Surveys on the Coast of New Jersey.* Victor Gelineau. Am. Soc. C. E. Oct., '27.
Surveying and Mapping in the United States. C. H. Birdseye. Am. Soc. C. E. Oct., '27.

S. City Planning

Die Bauzonenordnung für Kleinstadt und Landegemeinde.* (The Building Zone Regulation for Small Cities and Country Communities.) Heinrich Solinus. Tech. Gemein. Sept. 5, '27.
Preparing the Groundwork for a City: the Regrading of Seattle, Washington. Discussion: Charles E. Fowler. Am. Soc. C. E. Oct., '27.
Re-Arrangement of a Business District: Changes in Recent Years in Pittsburgh, Pennsylvania. Discussion: Edwin K. Morse. Am. Soc. C. E. Oct., '27.
The Planning of the Industrial City of Longview, Washington. Discussion: B. L. Lambuth. Am. Soc. C. E. Oct., '27.
Bodenpolitik und Städtebau.* (Land Policy and City Building.) Hahn. Tech. Gemein Sept. 5, '27.

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers. A Chicago office is maintained in co-operation with the Western Society of Engineers, and a San Francisco office, in co-operation with the Engineers' Club of San Francisco and the California Section of the American Chemical Society. The Service is available only to the several memberships and is maintained by contributions from the Societies and their individual members who are directly benefited.

Offices.—Eastern Office, 31 West 39th Street, New York, N. Y., Walter V. Brown, Manager; Chicago Office, 53 West Jackson Boulevard, Room 1736, Chicago, Ill., A. Krauser, Manager; and San Francisco Office, 57 Post Street, Room 715, San Francisco, Calif., Newton D. Cook, Manager.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Service for a period of three months, and are renewable on request. Notices for *Proceedings* should be addressed to Employment Service, 31 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A Bulletin of engineering positions available is published weekly and may be obtained by members of the Societies concerned at a subscription rate of $3 per quarter, or $10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of 1½% of yearly salary; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the Service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Service after the positions to which they refer have been filled, will not be forwarded.

MEN AVAILABLE

STRUCTURAL ENGINEER, M. Am. Soc. C. E.; age 43; with broad experience in design and construction of buildings, bridges, etc., in steel and concrete, desires position with structural or industrial company. Will go anywhere, but preference is Philadelphia or New York. Available any time. B–3054.

CHIEF ENGINEER, Assoc. M. Am. Soc. C. E.; age 44; married. Twenty-five years' experience, production control, executive management, improvements, and cost reduction, machine design, maintenance, power requirements, industrial plant and power plant design and construction. Location preferred, anywhere. B–5294.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; age 40; married. Sixteen years' experience in private practice with design and construction of water-works, sewerage systems, and pavements; and three years as superintendent of water-works. Desires place with consulting engineers or sales work. B–7523.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; graduate. Five years' varied experience structural and architectural detailing, estimating, and design. Desires position with structural engineer, architect, or contracting firm. Available two weeks after notice. B–8213.

RESIDENT OR CONSTRUCTION ENGINEER, Assoc. M. Am. Soc. C. E.; graduate; age 31; married. Ten years' experience, hydro-electric and mill construction, both field and office; has also superintended considerable construction work. Will go anywhere and consider any offer. B–8938.

OFFICE OR FIELD ENGINEER, Jun. Am. Soc. C. E.; age 30. Ten years' experience, railway maintenance and construction, highway location, design, and construction, public utilities and industrial construction. Neat, rapid draftsman, accurate field man. Desires permanent location with railway, public utility, or other industrial enterprise. Can report for duty on ten days' notice. B–9582.

ENGINEER, Jun. Am. Soc. C. E., with 5½ years' experience, including 2 years tropical work, on railroad and farms surveys, and 3½ years, mostly, sub-division work. In complete charge of projects. Capable of handling all surveying, mapping, planning, and computing, or to take charge of office. Available now. B–9908.

RESIDENT ENGINEER, M. A., Cambridge University, England; age 45; married. Twenty years' all-around experience in water-works and main drainage, masonry and earth dams, tunnels, pipe lines, large reinforced concrete sewers. B–9996.

CIVIL AND SANITARY ENGINEER, Jun. Am. Soc. C. E., graduate, Mass. Inst. Tech.; Licensed Engineer; age 29; married. More than five years' experience in responsible charge of municipal work, specializing in sewerage and highway work. Well qualified by experience for position as city engineer or manager in medium-sized municipality. Location, anywhere. C–84.

RECENT GRADUATE, of University of Maine, highway major Civil Engineering, 1926; age 21; single. Two summers' experience as instrumentman. Willing to go any distance or anywhere. Location preferred, South. C-1384.

CIVIL ENGINEER, M. Am. Soc. C. E.; Superintendent of Construction, Q. M. Dept., U. S. Army, for sewerage, commissary store house, and gymnasium, a civilian employee; Chief Engineer in charge, location, design, construction, operation, of extensive irrigation systems; consulting engineer for various large irrigation drainage systems; four years, member of Board of Water Engineers for Texas; four years, chief of party on location, engineer in charge of construction and highways, Central America; one year, general superintendent, Panama. Registered Engineer, Florida. Twenty years, Latin-American contact. Speaks Spanish. Will go anywhere. C–1712.

EXECUTIVE ENGINEER, Assoc. M. Am. Soc. C. E.; age 35; married. Thirteen years in charge, engineering, construction, estimating, purchasing; supervising construction and business detail for prominent construction company. Capable executive and organizer. Open for engagement with public utility, industrial corporation, or contracting company. C–1904.

EXECUTIVE, M. Am. Soc. C. E.; age 45; married; liberal education; technical graduate; extensive traveler; broad civil engineering experience, reinforced concrete specialist, organizer, and sales engineer. Acquainted with Oriental and Tropical conditions. C–2148.

JUNIOR MUNICIPAL ENGINEER, was graduated from the University of Florida, B. S. in C. E., 1927; age 25; single. Bridge draftsman with railroad company; instrumentman on municipal work, later instrumentman on drainage project, including the plotting of large scale topographical map of region. C–3253.

HIGHWAY AND MUNICIPAL ENGINEER, Assoc. M. Am. Soc. C. E.; age 36; married; college training. Thirteen years' experience, highways, streets, municipal improvements, drainage, and levees; design and supervision of construction; for seven years practiced as civil and consulting engineer. Capable executive. Former City Engineer, several cities; City Manager. Location preferred, Southern or Eastern States. C–3385.

DETAILER OR DESIGNER, Jun. Am. Soc. C. E.; age 28; married. All-around 3 years experience in drafting, detailing, estimating, and designing in both structural steel and reinforced concrete. Location preferred, New York City. C–3501.

BUILDING ESTIMATOR, Assoc. M. Am. Soc. C. E.; age 40; married; technical education, Ohio State University. Ten years' experience in design and construction of dams, pump houses, dwellings, and large factory buildings of concrete and steel; seven years, as building estimator with one of the large railroads. Desires connection with architect, contractor, or industrial organization. Will go anywhere. C–3699.

HYDRAULIC AND STRUCTURAL DESIGNER, Jun. Am. Soc. C. E.; college graduate; age 28; married. Four years' experience; desires connection with consulting engineer or utility company in the East, preferably New York vicinity. C–3711.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; college graduate; age 28; single. Five years' experience in detailing, designing, inspection, fabrication, and erection of structural steel, part of which time in responsible charge. Desires position with architect or consulting engineer. Location, Philadelphia, Pa. C–3736.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Cornell graduate; age 32. Nine years' experience on design and construction of municipal paving, sewer, and water projects. Wishes to devote entire time to sanitary engineering. Desires connection with sanitary board or sanitary engineer. Available first of the year. Location, immaterial. C–3741.

Membership

(From October 5 to November 1, 1927)

Additions

		Date of Membership.
HONORARY MEMBER		
MARX, Charles David. Prof. Emeritus of Civ. Eng., Leland, Stanford Junior Univ.; Cons. Engr., Stanford University, Calif..	M.	Oct. 7, 1896
	Hon. M.	Oct. 10, 1927
MEMBERS		
ABBOTT, Russell Ward. Room 310, Y. M. C. A., Toledo, Ohio.....	Jun.	Oct. 10, 1927
ALCOCK, Francis Wyndham.Community Rd., Bay Shore, N. Y....	Jun.	Oct. 10, 1927
ALVORD, Henry Bissell. Prof., Civ. Eng. and in Chg. of Dept., Northeastern Univ., Boston (Res., 52 Frost Ave., Melrose Highlands), Mass.....	Assoc. M.	June 6, 1927
ANDERSON, Arvid Anton. Field Engr., Portland Cement Assoc., 33 West Grand Ave., Chicago, Ill.....	Assoc. M.	Oct. 10, 1927
ANDUJAR, Anthony Leveridge. 560 West 173d St., New York, N. Y.....	Jun.	Oct. 10, 1927
ARNOLD, Oscar Anderssen. Designer and Engr. of Design, International Paper Co., New York (Res., 272 Lincoln Pl., Brooklyn), N. Y.....	Assoc. M.	Oct. 10, 1927
AROYAN, Hagop Harootune. Asst. Engr., Reading Co., Philadelphia (Res., 40 Sunshine Rd., Upper Darby), Pa.....	Assoc. M.	Oct. 10, 1927
BAILLY, John Edmon, Jr. With P. R. R., 444 Transportation Bldg., Washington, D. C.....	Assoc. M.	June 6, 1927
BAKER, Harold Wallace. Commr. of Public Works, 26 City Hall, Rochester, N. Y.....	Jun.	Mar. 5, 1912
	Assoc. M.	May 13, 1918
	M.	Oct. 10, 1927
BELING, George Norman. 436 North 9th St., Allentown, Pa.....	Jun.	Oct. 10, 1927
BELL, James C. Constr. Engr., Board of Education, 13 South Fitzhugh St., Rochester, N. Y.....	Assoc. M.	April 7, 1915
	M.	Oct. 10, 1927
BENDER, Harry. 3331 North 17th St., Philadelphia, Pa.....	Jun.	Oct. 10, 1927
BENNETT, Charles Stuart. Engr., The Miami Conservancy Dist., Dayton, Ohio.....	Assoc. M.	Mar. 12, 1923
	M.	Oct. 10, 1927
BERG, Moncure Burke. 105 Lincoln Park, Newark, N. J.....	Jun.	Oct. 10, 1927
BLACKBURN, George Blair. Care, West Virginia Utilities Co., Morgantown, W. Va.....	Jun.	Oct. 10, 1927
BOHNET, Charles Frederick. 34 Echodale Ave., Baltimore, Md...	Jun.	Oct. 10, 1927
BOYLE, Blair. County Engr., Cowley County, Court House, Winfield, Kans.....	Assoc. M.	July 6, 1920
	M.	Oct. 10, 1927
BRINKLEY, Milo Hamilton. Valuation Examiner Interstate Commerce Comm., Washington, D. C.....	Jun.	Mar. 1, 1904
	Assoc. M.	Jan. 8, 1908
	M.	Oct. 10, 1927
BRITTON, Clark Veazie. Superv. Engr., Air Reduction Sales Co., 342 Madison Ave., New York, N. Y. (Res., 46 Hasbrouck Pl., Rutherford, N. J.).....	Jun.	Oct. 10, 1927
BROWN, Ralph Elmore. 820 Laramie St., Manhattan, Kans.....	Jun.	Oct. 10, 1927
BURKART, Edwin Howard, Jr. Draftsman Dept. of Bridges and Bldgs., P. R. R., 670 Broad St. Station, Philadelphia (Res., New Britain), Pa.....	Jun.	Oct. 10, 1927
BURNETTE, Chauncey Allison. Branch Mgr. and Contr. Engr., Illinois Steel Bridge Co., 321 Hutton Bldg., Spokane, Wash....	Assoc. M.	June 6, 1911
	M.	Oct. 10, 1927
BURR, Henry Amsden. Asst. Bridge Engr., State Dept. of Highways and Public Works (Res., 3515 Richland Ave.), Nashville, Tenn.....	Assoc. M.	Jan. 15, 1923
	M.	Oct. 10, 1927
CALDERHEAD, Robert James. Chf. Dist. Draftsman, State Dept. of Highways, Wellsboro, Pa.....	Assoc. M.	Oct. 10, 1927
CANADA, Fernando Alejandro. 152 Harvard St., Brookline, Mass.	Jun.	Oct. 10, 1927
CASELLAS, Ramon Ramos. Gen. Mgr., Benitez Sugar Co. and José J. Benitez, e Hijos, Central Playa Grande, Vieques, Porto Rico.....	M.	Oct. 10, 1927
CASS, Michael James. Permanent Way Engr., Melbourne Tramways, Melbourne (Res., 23 Clyde St., Surrey Hills), Victoria, Australia.....	M.	April 18, 1927
CHAN, Frank Jue. Junior Structural Draftsman, State Dept. of Public Works (Res., 910½ Sixth St.), Sacramento, Calif.....	Jun.	Oct. 10, 1927
CHASE, John Howe. Cons. Engr., Jackson Blk., Riverside, Calif..	Assoc. M.	Oct. 10, 1927
CHENEY, Laurence Bradford. Southbridge, Mass.....	Jun.	Oct. 10, 1927
CHOBOT, Edwin Frank. Engr. and Sales Engr., Converse Bridge & Steel Co., Chattanooga, Tenn.....	Assoc. M.	Oct. 10, 1927
CHRISTENSEN, Einar. Mgr., Eng. Dept., National Bldg. Units Corporation, 1600 Arch St., Room 1021, Philadelphia, Pa....	Assoc. M.	Oct. 10, 1927
COCHRAN, Harold Chester. Junior Engr., San. Dist. of Chicago (Res., 7504 Kingston Ave.), Chicago, Ill.....	Jun.	Oct. 10, 1927

MEMBERS—(*Continued*)

		Date of Membership.
COCHRAN, Robert Leroy. State Engr., State Engr.'s Office, Lincoln, Nebr.	Assoc. M.	Sept. 9, 1919
	M.	Oct. 10, 1927
CONSTANTINE, Emile Werner. Care, Alabama Power Co., 600 Alabama Power Co. Bldg., Birmingham, Ala.	Assoc. M.	Oct. 10, 1927
COOK, Rudolph. Junior Engr., N. Y. C. R. R. (Res., 2284 Grand Ave.), New York, N. Y.	Jun.	Oct. 10, 1927
COOLIDGE, Richard Newell. Asst. Gen. Mgr., Eng. Works, Dravo Contr. Co., Pittsburgh (Res., 220 Osborne Lane, Glen Osborne, Sewickley), Pa.	Assoc. M.	June 1, 1920
	M.	Oct. 10, 1927
COPELAND, George Rogers. 595 Orange St., Riverside, Calif.	Jun.	Oct. 10, 1927
CORNELL, Charles Brown. Field Engr., Mahoning Val. San. Dist., 901 City Bank Bldg., Youngstown, Ohio.	Assoc. M.	Sept. 2, 1914
	M.	Oct. 10, 1927
CRAVEN, Aaron Sanford. Chf. Engr., Coral Gables Corporation; Vice-Pres. and Chf. Engr., Coral Gables Constr. Co., Box 848, Coral Gables, Fla.	Assoc. M.	Mar. 12, 1918
	M.	Oct. 10, 1927
CREAL, Hugh Raymond. Bridge Engr., State Highway Dept., Box 379, Frankfort, Ky.	Assoc. M.	Oct. 10, 1927
CRUTE, William Rowzie. Plant Engr., The Champion Fibre Co., Canton, N. C.	M.	Oct. 10, 1927
CURTIS, Donald Dexter. Asst. Prof., Mechanics and Hydraulics, Univ. of Iowa (Res., 1040 East Burlington St.), Iowa City, Iowa.	Assoc. M.	Oct. 10, 1927
CUSHING, John Francis. Pres., Great Lakes Dredge & Dock Co., 104 South Michigan Ave., Chicago, Ill.	M.	Oct. 10, 1927
DANIEL, Arthur Franklin. Field Engr., Portland Cement Assoc. (Res., 6008 Junius St.), Dallas, Tex.	Assoc. M.	Oct. 10, 1927
DAVIDSON, Edward Willoughby, Jr. 1123 Sixth St., Bremerton, Wash.	Jun.	Oct. 10, 1927
DAVIDSON, Harold Nils. 7625 Eggleston Ave., Chicago, Ill.	Jun.	Oct. 10, 1927
DAVIS, George Battley. 1810 Twenty-second Ave., Gulfport, Miss.	Jun.	Oct. 10, 1927
DAVIS, Paul Dexter. Asst. Engr., William M. Piatt (Res., Franklin Court Apartments), Durham, N. C.	Assoc. M.	Oct. 10, 1927
DAY, Charles Lincoln. Engr., Johns-Manville Corporation, 292 Madison Ave., New York, N. Y.	Assoc. M.	Oct. 10, 1927
DeMARTINI, Frank Edward. 637 Greenwich St., San Francisco, Calif.	Jun.	Oct. 10, 1927
DURKIN, Frank Joseph. 3293 Perry Ave., New York, N. Y.	Jun.	Oct. 10, 1927
DYER, Garvin Henry. Asst. Engr., Springfield City Water Co. (Res., 1321 North Concord Ave.), Springfield, Mo.	Jun.	Oct. 10, 1927
ELLIOTT, John Arthur. Highway Engr., U. S. Bureau of Public Roads (Res., 340 East 28th St., North), Portland, Ore.	Assoc. M.	Jan. 6, 1915
	M.	Oct. 10, 1927
ERICKSON, Archie Milton. 301 West 109th St., New York, N. Y.	Jun.	Oct. 10, 1927
EVANS, Herbert Beales. 421 West Harvey St., Wellington, Kans.	Jun.	Oct. 10, 1927
FISH, Edward Arthur. Res. Engr., State Highway Dept.; 125 Georgia Ave., Barnesville, Ga.	Assoc. M.	Oct. 10, 1927
FONT, Manuel. Care, Mass. Inst. Tech, Cambridge, Mass.	Assoc. M.	Aug. 4, 1924
	M.	Oct. 10, 1927
FREEMAN, Ronald Melville. Asst. City Engr. Box 386, Roseville, Mich.	Jun.	Oct. 10, 1927
FRENCH, Richard Charles. R. D. 1, Dover, N. J.	Jun.	Oct. 10, 1927
FRIED, Frederick Stanley. Eng. Dept., Alabama Power Co., Birmingham, Ala.	Jun.	Oct. 10, 1927
FRY, Elbert David. Sewer Comm. Engr., Greater Greenville Sewer Dist. Comm., 913 East North St., Greenville, S. C.	Assoc. M.	Aug. 29, 1927
GIFFORD, Allan Thurston. Enfield, Mass.	Jun.	Oct. 10, 1927
GODWIN, Robert Hugh. 222 Boswell St., Batesville, Ark.	Jun.	Oct. 10, 1927
GOLLANDSKOFF, Michael Gabriel. 2207 Ellsworth St., Berkeley, Calif.	Jun.	Oct. 10, 1927
GONGWER, Verne. Hydr. Engr., Cushman Power Project, Tacoma (Res., 415 Fifth St., N. E., Puyallup), Wash.	M.	Oct. 10, 1927
GREEN, Richard Oscar. Dist. Engr., State Dept. of Public Works State Capitol (Res., 1551 South 21st St.), Lincoln, Nebr.	Assoc. M.	Oct. 11, 1920
	M.	Oct. 10, 1927
GROVE, Emery Chester. 118 South Chestnut St., Olathe, Kans.	Jun.	Oct. 10, 1927
GRUBB, Albert Leslie. 1618 Spring St., Parkersburg, W. Va.	Jun.	Oct. 10, 1927
GRUNAUER, Mortimer. Chf. Engr., Bing & Bing, Inc., 119 West 40th St. (Res., 49 St. Nicholas Terrace), New York, N. Y.	Jun.	Feb. 6, 1912
	Assoc. M.	Mar. 13, 1917
	M.	Oct. 10, 1927
GUILD, Wilbur Gillfillan. With Waddell & Hardesty, 150 Broadway, New York, N. Y. (Res., 133 North Maple Ave., East Orange, N. J.)	Jun.	Oct. 10, 1927
GWINN, Ernest Sidney. 301 West 109th St., New York, N. Y.	Jun.	Oct. 10, 1927
HALL, Russell Alger. Associate, Dept. of Eng. Drawing, Univ. of Illinois, Urbana (Res., 618 West Healey St., Champaign), Ill.	Assoc. M.	Oct. 10, 1927
HAMMOND, Charles Lester. 127 Underwood St., Newark, N. J.	Jun.	Oct. 10, 1927
HANSEN, Reinhold Bernhard. Chf. Clerk, The Magnavox Co., 2725 East 14th St., Oakland (Res., 1417 Plymouth Ave., San Francisco), Calif.	Jun.	Oct. 10, 1921
	Assoc. M.	Aug. 29, 1927

MEMBERS—(*Continued*)

		Date of Membership.
HARRISON, Frank Earle. City Engr. (Res., 960 Wendell Ave.), Schenectady, N. Y.	Assoc. M.	June 7, 1926
	M.	Oct. 10, 1927
HARTGERING, John McRae. Cons. Engr. (Hubbell, Hartgering & Roth), 2640 Buhl Bldg., Detroit, Mich.	Assoc. M.	Jan. 14, 1918
	M.	Oct. 10, 1927
HATMAKER, Daniel George. 109 North West 6th Ave., Miami, Fla.	Assoc. M.	Oct. 10, 1927
HAZARD, Henry New. Res. Engr., Bethlehem Steel Co., (Res., 21 West Church St.), Bethlehem, Pa.	Jun.	Oct. 10, 1927
HICKLIN, Robert Guthrie. Managing Engr., Municipal Dept., Robert & Co., Inc., 706 Bona Allen Bldg., Atlanta, Ga.	Assoc. M.	Oct. 10, 1927
HOKE, John Boyd. Engr., Albright & Mebus (Res., 142 Harrison Ave.), Glenside, Pa.	Assoc. M.	Oct. 10, 1927
HOLDEFER, Joseph Lutz. Care, State Highway Comm., Ames, Iowa	Jun.	Oct. 10, 1927
HOLT, Marshall. 406 South Lincoln Ave., Urbana, Ill.	Jun.	Oct. 10, 1927
HORANDT, Henry. 148 North Warren St., Syracuse, N. Y.	Jun.	Oct. 10, 1927
HORTON, Donald Francis. Room 435 Custom House, 8th and Olive Sts., St. Louis, Mo.	Jun.	Oct. 10, 1927
HOUSER, Harold Saxe. Draftsman, Pittsburgh-Des Moines Steel Co. (Res., 31½ Dilworth St.), Pittsburgh, Pa.	Jun.	Oct. 10, 1927
HUGHES, William Gerard. Asst. Supt., John F. Hughes Constr. Co. (Res., 1433 Elm St.), Utica, N. Y.	Jun.	Oct. 10, 1927
HUNTER, Don William. Archt. (W. E. N. Hunter Co.), 2457 Woodward Ave., Detroit, Mich.	Assoc. M.	Oct. 10, 1927
HURLBURT, Harvey Seymour. Erecting Engr., The U. G. I. Contr. Co., Box 1031, Sioux City, Iowa	Assoc. M.	Aug. 29, 1927
HUSTAD, Andrew P., Cons. Engr (The Hustad Co.), 521 Sexton Bldg. (Res., 4132 Aldrich Ave., South), Minneapolis, Minn.	Assoc. M.	Aug. 31, 1915
	M.	Oct. 10, 1927
JACOBS, Reginald Frederick. 11 Clive St., Jamaica Plain, Boston, Mass.	Jun.	Oct. 10, 1927
JENSON, Joseph Richard. Office Engr., San Francisco Toll Bridge Co., 519 Laurel Ave., San Mateo, Calif.	Jun.	June 6, 1927
JIMENEZ, Julio. Structural Draftsman, Dept. of Eng., Pacific Gas & Elec. Co. (Res., 2918 Van Ness Ave.), San Francisco, Calif.	Jun.	Oct. 10, 1927
JOHNSON, James Rupert. 519 Tenth Ave., S. E., Minneapolis, Minn.	Jun.	April 18, 1927
JOHNSON, Walter Kenneth. 46 Melrose St., Lawrence, Mass.	Jun.	Oct. 10, 1927
JONES, Harvey P. Engr. (H. P. Jones & Co.), 1601 Second National Bank Bldg., Toledo, Ohio	Assoc. M.	June 6, 1921
	M.	Oct. 10, 1927
JONES, Joseph William. Transitman, B. & O. R. R. (Res., 1509 North Wolfe St.), Baltimore, Md.	Assoc. M.	Oct. 10, 1927
KAROLAK, Alphonse. Engr. Draftsman, Board of Transportation, 49 Lafayette St., New York (Res., 1840 Myrtle Ave., Brooklyn), N. Y.	Jun.	Oct. 10, 1927
KAYS, Marion Reed. Supt. and Chf. Engr., Lake Worth Drainage Dist., 316 Guaranty Bldg., West Palm Beach, Fla.	Assoc. M.	Dec. 6, 1910
	M.	Oct. 10, 1927
KELLEY, Earl Foster. Chf., Div. of Tests, U. S. Bureau of Public Roads, Washington, D. C.	Assoc. M.	Sept. 12, 1916
	M.	Oct. 10, 1927
KELLY, Thomas James. County Engr., Tom Green County, Box 1, San Angelo, Tex.	Assoc. M.	Oct. 10, 1927
KESNER, Henry James. Associate Prof., Civ. Eng., Univ of Nebraska, Lincoln, Nebr.	Jun.	Dec. 6, 1910
	Assoc. M.	Mar. 4, 1913
	M.	Oct. 10, 1927
KIMBERLY, Albert Elliott. Cons. San. Engr., 1102 Atlas Bldg., Columbus, Ohio	M.	Oct. 10, 1927
LAMB, John Ferebee. Constr. Supt., Imperial Irrig. Dist., Box 7, Imperial, Calif.	Assoc. M.	Oct. 10, 1927
LANDERS, Charles Scott. Cons. Engr., 292 Madison Ave., New York, N. Y.	M.	Oct. 10, 1927
LANE, William Walter. Chf. Engr., State Highway Dept. (Res., 522 West Culver St.), Phoenix, Ariz.	Assoc. M.	June 1, 1920
	M.	Oct. 10, 1927
LANICCA, Wieland Borwell, Jr., Leetsdale, Pa.	Jun.	Oct. 10, 1927
LAUBE, Charles Joseph. Designer, Weinberger & Weishoff, 247 Park Ave. (Res., 115 East Mosholu Parkway, North), New York, N. Y.	Assoc. M.	Oct. 10, 1927
LEVERING, Howard Allen. Senior Asst. Engr., State Road Comm. of West Virginia, Ceredo, W. Va.	Assoc. M.	June 1, 1920
	M.	Oct. 10, 1927
LEVY, Edwin Felix. With P. J. Walker Co. (Res., 727 Seventeenth Ave.), San Francisco, Calif.	Jun.	Oct. 10, 1927
LIVINGSTON, Penn Poore. 830 Power Bldg., Chattanooga, Tenn.	Assoc. M.	Oct. 10, 1927
LYON, Richard Bonham. Box 75, Lowville, N. Y.	Jun.	Oct. 10, 1927
McCLINTOCK, Leonard Edgar. 471 Addison Ave., Palo Alto, Calif.	Jun.	Oct. 10, 1927
McFADDEN, Richard Rowell. Y. M. C. A., Springfield, Ill.	Jun.	Oct. 10, 1927

MEMBERS—(*Continued*)

		Date of Membership.
McFARLAND, Kenneth Cushing. Asst. Engr., City of Aberdeen, Aberdeen (Res., 907 North 13th St., Tacoma), Wash.	Assoc. M.	June 6, 1927
MALKASIAN, Zaven. 249 Boylston St., Watertown, Mass.	Jun.	Oct. 10, 1927
MASURY, Alfred Fellows. Vice-Pres.-Chf. Engr., International Motor Co., 34th St. and Anable Ave., Long Island City, N. Y.	Assoc. M. M.	Jan. 6, 1915 Oct. 10, 1927
MILLER, Leroy Glick. 477 East Mound St., Columbus, Ohio.	Jun.	Oct. 10, 1927
MOORE, Walter Parker. 1310 Fairview Ave., Houston, Tex.	Jun.	Oct. 10, 1927
MORGAN, Frederick Stewart. 122 East 34th St., New York, N. Y.	Jun.	Oct. 10, 1927
NAGLE, John Marion. Res. Engr., Nagle, Witt, Rollins Eng. Co., Wharton, Tex.	Assoc. M. M.	Jan. 19, 1920 Oct. 10, 1927
NICHOLS, Norman Dyer. Asst. to Engr. of Tests, U. S. Gypsum Co., New York (Res., 671 Palmer Ave., Bronxville), N. Y.	Jun.	Oct. 10, 1927
NOVAK, Charles Edward. Junior Engr., Board of Transportation, New York (Res., 1278 East 27th St., Brooklyn), N. Y.	Jun.	Oct. 10, 1927
ORR, Charles Seay. 112 West 10th St., Emporia, Kans.	Jun.	Oct. 10, 1927
ORR, Harold Ripley. Insp. with G. Saxton Thompson (Res., 115 Sixth Ave., North), Troy, N. Y.	Jun.	Oct. 10, 1927
ORTENBLAD, Alberto. Tabapuan, E. de S. Paulo, Brazil.	Jun.	Aug. 29, 1927
OSBORNE, Elwood Noyes. Draftsman, Morris Knowles, Inc., 507 Westinghouse Bldg., Pittsburgh, Pa.	Jun.	June 6, 1927
OWENS, Reuben Hirst. Eng. Draftsman, City of San Francisco, 1457 Balboa Ave., Burlingame, Calif.	Jun.	Oct. 10, 1927
PAGE, John Marshall. Executive Secy., Associated Gen. Contrs., Texas Highway Branch, Austin, Tex.	Assoc. M. M.	Jan. 13, 1919 Oct. 10, 1927
PARSONS, Francis Wayland. Asst. Engr., City Engr.'s Dept., Los Angeles (Res., 330 West Maple St., Glendale), Calif.	Assoc. M.	Oct. 10, 1927
PETERSEN, Randolph Joseph. 14 West Church St., Bethlehem, Pa.	Jun.	Oct. 10, 1927
PHILBRICK, Benjamin Simpson. Asst. Gen. Supt., Aluminum Co. of America, Calderwood, Tenn.	Assoc. M. M.	Mar. 2, 1915 Oct. 10, 1927
PIERCE, Charles William. Engr., The Austin-Western Road Machinery Co., 477 East 3d St. (Res., 1427 West 51st St.), Los Angeles, Calif.	Jun. Assoc. M. M.	April 17, 1917 Oct. 11, 1920 Oct. 10, 1927
PIERCE, Robert Gordon. California Rd., Tuckahoe, N. Y.	Jun.	Oct. 10, 1927
POPPER, Max Joseph. Structural Designer, Board of Transportation (Res., 1717 Bryant Ave.), New York, N. Y.	Jun.	Oct. 10, 1927
PRICE, Philip Wallis. Prin. Asst. Engr., Bureau of Bridges, Dept. of Public Works, Allegheny County (Res., 7 Hollenden Rd., Squirrel Hill Station), Pittsburgh, Pa.	Jun. Assoc. M. M.	April 2, 1901 Feb. 5, 1908 Oct. 10, 1927
RASMUSSEN, Howard Burnett. 321 North Lorel Ave., Chicago, Ill.	Jun.	Oct. 10, 1927
REDD, Carl Leitner. Hurricane, Ala.	Jun.	Oct. 10, 1927
REED, Oren. Asst. Designing Engr., San Joaquin Light & Power Corporation, Fresno, Calif.	Jun. Assoc. M.	Jan. 14, 1924 Oct. 10, 1927
RICH, Harold James. 1009 Sixth Ave., Sault Ste. Marie, Mich.	Jun.	Oct. 10, 1927
RISLEY, Warner Irelan. Civ. Engr., Guarantee Trust Bldg., Atlantic City, N. J.	Assoc. M. M.	June 4, 1913 Oct. 10, 1927
ROBERTS, Marvin Edward. 902 South High St., Columbia, Tenn.	Jun.	Oct. 10, 1927
ROETMAN, Edmond Teerink. 215 North Hyland, Ames, Iowa.	Jun.	Oct. 10, 1927
ROWE, Norman Leslie, 3d. 622 Hancock St., Saginaw, West Side, Mich.	Jun.	Oct. 10, 1927
SCHAUFFLER, Henry Albert. Asst. Prof., Civ. Eng., Union Coll., Schenectady, N. Y.	Assoc. M.	Oct. 10, 1927
SCHMITT, Harry Andrew. Box 625, Chapel Hill, N. C.	Jun.	Oct. 10, 1927
SCHWEIM, Henry Julius. Chf. Engr., The Gypsum Industries, 844 Rush St., Chicago, Ill.	Assoc. M.	Oct. 10, 1927
SCOTT, John Walter. Party Chf. and Res. Engr., Fred H. Tibbetts, Box 965, Auburn, Calif.	Assoc. M.	Oct. 10, 1927
SCOTT, Robert Kenneth. 336 Commonwealth Ave., Boston, Mass.	Jun.	Oct. 10, 1927
SEAMAN, Ayres Cromwell. 606 Locust Pl., Sewickley, Pa.	Jun.	Oct. 10, 1927
SEELY, George Herman. 218 North 8th Ave., Mount Vernon, N. Y.	Jun.	Oct. 10, 1927
SHIELDS, Arthur Clarence. Gen. Mgr., D. & R. G. W. R. R., 329 Equitable Bldg, Denver, Colo.	M.	Oct. 10, 1927
SHOEMAKER, Robert Comly. 2017 Locust St., Philadelphia, Pa.	Jun.	Oct. 10, 1927
SLOAN, David Bartlett. 1918 Sixteenth Ave., South, Birmingham, Ala.	Jun.	Oct. 10, 1927
SMILEY, Paul Ewing. 263 Grove Ave., Dayton, Ohio.	Jun.	Oct. 10, 1927
SMITH, Ferdinand Otto. With The Texas Co. (Res., 626 West 136th St.), New York, N. Y.	Jun.	April 18, 1927
SOWDEN, Herbert Jones. Asst. Engr., Bureau of Eng. (Res., 4445 North 9th St.), Philadelphia, Pa.	Assoc. M.	Oct. 10, 1927
SPANN, William Mims. City Engr., City Hall, St. Joseph, Mo.	Assoc. M. M.	June 19, 1922 Oct. 10, 1927
SPEERT, Julius Louis. 2361 West North Ave., Baltimore, Md.	Jun.	Oct. 10, 1927
SPESSARD, Richard Huyette. 308 Lloyd St., Greenville, S. C.	Jun.	Oct. 10, 1927

MEMBERS—(*Continued*)

		Date of Membership.
SPRINGER, Frederick Ward. Asst. Res. Engr., Stevens & Wood, Inc. (Res., 808 River Ave.), Toronto, Ohio	Assoc. M.	Oct. 10, 1927
SPURR, Jerome Lyon. Care, Met. Dist. Water Supply, Enfield, Mass.	Jun.	Oct. 10, 1927
STAUFFEN, Frederick Charles. Gen. Supt., Union Shipbuilding Co., Box 475 (Res., 401 Lake Ave., Cedarcroft), Baltimore, Md.	Assoc. M. M.	Oct. 14, 1919 Oct. 10, 1927
STETINA, Henry John. Structural Detailer and Draftsman, McClintic-Marshall Constr. Co. (Res., Y. M. C. A.), Pottstown, Pa.	Jun.	Oct. 10, 1927
STOCKBRIDGE, Glenn Henry. Y. M. C. A., Santa Ana, Calif.	Jun.	Oct. 10, 1927
STUMP, Robert Leonard. Office Engr., Ventura County (Res., 517 Ann St.), Ventura, Calif.	Assoc. M.	Oct. 10, 1927
TAYLOR, Frederic Charles. With Hoad, Decker, Shoecraft & Drury, Ann Arbor, Mich.	Jun. Assoc. M.	Feb. 25, 1924 Oct. 10, 1927
TEALE, George Francis. Eng. Instr., Sacramento Junior Coll. (Res., 2665 Sixth Ave.), Sacramento, Calif.	Assoc. M.	Oct. 10, 1927
THOMAS, Gordon Evan. 75 Foster St., Arlington, Mass.	Jun.	Oct. 10, 1927
THOMSON, Frederick Mann. Peyton Hotel, Charleston, W. Va.	Jun.	Oct. 10, 1927
TIFFANY, Charles Austin. Route 4, Box 257, Yakima, Wash.	Jun.	Oct. 10, 1927
TOMLINSON, Charles Lawrence. Bldg. Supt., C. H. Bebb and C. F. Gould, 710 Hoge Bldg. (Res., 4522 Brooklyn Ave.). Seattle, Wash.	Assoc. M.	Oct. 10, 1927
TOWLE, Foster. Designing Engr., Isabela Irrig. Service, Quebradillas, Porto Rico	Jun. Assoc. M. M.	Oct. 30, 1906 Feb. 4, 1914 Oct. 10, 1927
TROXELL, Harold Coble. Asst. Engr., Water Resources Branch, U. S. Geological Survey, 3030 Thorn St., San Diego, Calif.	Jun. Assoc. M.	Oct. 2, 1922 Oct. 10, 1927
TSAI, Fang-Yin. Mass. Inst. Tech. Dormitory, Cambridge, Mass.	Jun.	Oct. 10, 1927
UHLER, Eugene Henry. Cons. and Designing Engr., Borough of Nazareth; Asst. Prof., Civ. Eng., Lehigh Univ. (Res., 1332 Montrose Ave.), Bethlehem, Pa.	M.	Aug. 29, 1927
VAN ALSTINE, Roy Daniel. Director of Public Service and City Engr. (Res., 852 Elm Ave.), Long Beach, Calif.	Assoc. M. M.	Feb. 25, 1924 Oct. 10, 1927
VAN DE GREYN, Max. Mgr. and Engr., Village of Roseville, Box 113, Roseville, Mich.	Assoc. M.	Oct. 10, 1927
VAN HULSTEYN, John Max Carey. Asst. Engr., New York and New Jersey Bridge and Tunnel Comms., New York, N. Y. (Res., 1304 John St., Baltimore, Md.)	Assoc. M.	Oct. 10, 1927
VOSTEEN, Fred Henry. Head Officeman with Frank E. Dodge, La Jolla (Res., 3820 Forty-first St., San Diego), Calif.	Jun.	Oct. 10, 1927
WARD, John Powell. Asst. City Engr., Delray, Fla.	Jun.	Oct. 10, 1927
WARING, John Dawson, Jr. Mathis, Tex.	Assoc. M.	June 6, 1927
WARREN, Ray. Highways Engr., Municipal Bldg., Greensboro, N. C.	Assoc. M.	Oct. 10, 1927
WATTS, Joseph Clyde. Y. M. C. A., Oak Park, Ill.	Jun.	Oct. 10, 1927
WEEKS, Lucas Alfred. Vice-Pres. and Treas., Hedges-Weeks Constr. Co., 415 Holland Bldg., Springfield, Mo.	Assoc. M.	Oct. 10, 1927
WEINMAN, Irving Martin. Engr., Leonard Paving Co. (Res., 619 West 142d St.), New York, N. Y.	Jun.	Oct. 10, 1927
WELDEN, Neil. Designer and Draftsman, Bridge Dept., C. R. I. & P. Ry., La Salle St. Station (Res., 1400 East 53d St.), Chicago, Ill.	Jun. Assoc. M.	Oct. 12, 1925 Oct. 10, 1927
WESSENAUER, Gabriel Otto. 546 Hill St., Sewickley, Pa.	Jun.	Oct. 10, 1927
WESTERHOFF, Russell Post. 484 Beacon St., Boston, Mass.	Jun.	Oct. 10, 1927
WHEELER, Robert Marret. 228 Thirteenth St., Milwaukee, Wis.	Jun.	Oct. 10, 1927
WHYTE, Clifford Riddle. Superv. Draftsman, Philadelphia Impvts., P. R. R. (Res., 110 East Moreland Ave.), Philadelphia, Pa.	Assoc. M.	Oct. 10, 1927
WIEDEMAN, Herman Frederick. Civ., San. and Hydr. Engr. (Wiedeman & Singleton, Inc.), 1404 Candler Bldg. (Res., 934 Williams Mill Rd., N. E.), Atlanta, Ga.	Assoc. M. M.	Oct. 9, 1917 Oct. 10, 1927
WILLIAMS, Howard James. Asst. Engr., Fay, Spofford & Thorndyke, 44 School St., Boston, Mass.	Assoc. M.	Oct. 10, 1927
WILLIER, Thomas Edward. 430 Poplar St., Springfield, Mo.	Jun.	Oct. 10, 1927
WILLIS, Charles Leyton, Jr. With Am. Bridge Co. (Res., 1720 West 5th Ave.), Gary, Ind.	Jun.	Oct. 10, 1927
WING, Frederick Kelly. Pres. and Chf. Engr., Frederick K. Wing Co., 1314 Prudential Bldg., Buffalo, N. Y.	Jun. Assoc. M. M.	May 31, 1892 Nov. 1, 1899 Oct. 10, 1927
WITMER, John Donald. 5 Juniata St., Lewistown, Pa.	Jun.	Oct. 10, 1927
WRIGHT, Allen Vinson. 324 College St., Macon, Ga.	Jun.	Oct. 10, 1927
ZWANZIGER, David Mendel. Cost Estimator, The Heyman & Goodman Co., Inc., 880 Eighth Ave., New York, N. Y.	Jun.	Oct. 10, 1927

Reinstatements

Members	Date of Reinstatement
FEELEY, William Patrick:	Oct. 10, 1927
JANES, George Portlock	Oct. 10, 1927
SERJEANT, Hugh	Sept. 27, 1927
WILLARD, Norman Rand	Oct. 10, 1927
YOUNG, Charles Asa Dilts	Sept. 27, 1927

Resignations

Members	Date of Resignation
McGEEHAN, Paul	Sept. 27, 1927
Associate Memeers	
WONG, Jick Gam	Oct. 10, 1927

Deaths

CURRY, Charles Kenneth. Elected Associate Member, October 1, 1926; died September 17, 1927.

GREEN, Hubert Edward. Elected Member, December 2, 1903; died September 7, 1927.

MELCHER, Clarence Lewis. Elected Associate Member, May 28, 1923; died February 21, 1927.

PERKINS, Frank William. Elected Member, July 11, 1921; died May 18, 1927.

QUINCY, Charles Frederick. Elected Affiliate, February 4, 1896; died October 1, 1927.

ROSECRANS, Merle William. Elected Associate Member, October 11, 1920; Member October 1, 1926; died October 9, 1927.

RYAN, Michael Healey. Elected Junior December 3, 1901; Associate Member April 1, 1908; died September 29, 1927.

Total Membership of the Society, November 1, 1927

Members	**5 372**	
Associate Members	**5 613**	
Corporate Members		**10 985**
Honorary Members		**15**
Juniors		**1 404**
Affiliates		**141**
Fellows		**8**
Total		**12 553**